

GEF-8 PROJECT IDENTIFICATION FORM (PIF)

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General Project Information

Project Title

Sustainable Management and Protection of the Transboundary Djefara/Jifarah Aquifer System

Region	GEF Project ID
Africa	12282
Country(ies)	Type of Project
Regional	MSP
Libya	
Tunisia	
GEF Agency(ies):	GEF Agency ID
FAO	750589
Executing Partner	Executing Partner Type
Global Water Partnership - GWP	Others
Government of Libya (TBD)	Government
Government of Tunisia (TBD)	Government
GEF Focal Area (s)	Submission Date
International Waters	2/16/2026

Project Sector (CCM Only)

Taxonomy

Aquifer, Focal Areas, Transboundary Diagnostic Analysis and Strategic Action Plan Preparation, International Waters, Freshwater, Climate Change Adaptation, Climate Change, Sustainable Development Goals, Land Degradation, Food Security, Sustainable Land Management, Drought Mitigation, Influencing models, Convene multi-stakeholder alliances, Demonstrate innovative approach, Strengthen institutional capacity and decision-making, Stakeholders, Communications, Strategic Communications, Awareness Raising, Education, Private Sector, Local Communities, Beneficiaries, Type of Engagement, Participation, Partnership, Consultation, Non-Governmental Organization, Civil Society, Gender Equality, Gender Mainstreaming, Gender results areas, Capacity, Knowledge and Research, Learning, Theory of change, Adaptive management, Indicators to measure change, Capacity Development, Knowledge Exchange, Conference, Knowledge Generation, Training, Seminar, Workshop, River Basin, Fisheries, Climate information, Climate resilience, SMEs, Information Dissemination, Behavior change, Gender-sensitive indicators, Knowledge Generation and Exchange

Type of Trust Fund	Project Duration (Months)
GET	48
GEF Project Grant: (a)	GEF Project Non-Grant: (b)
4,416,210.00	0.00
Agency Fee(s) Grant: (c)	Agency Fee(s) Non-Grant (d)
419,540.00	0.00
Total GEF Financing: (a+b+c+d)	Total Co-financing

4,835,750.00	35,456,660.00
PPG Amount: (e)	PPG Agency Fee(s): (f)
150,000.00	14,250.00
PPG total amount: (e+f)	Total GEF Resources: (a+b+c+d+e+f)
164,250.00	5,000,000.00
Project Tags	
CBIT: No NGI: No SGP: No Innovation: No Competitive Window: No	

Project Summary

Provide a brief summary description of the project, including: (i) what is the problem and issues to be addressed? (ii) what are the project objectives, and if the project is intended to be transformative, how will this be achieved? (iii), how will this be achieved (approach to deliver on objectives), and (iv) what are the GEBs and/or adaptation benefits, and other key expected results. The purpose of the summary is to provide a short, coherent summary for readers. The explanation and justification of the project should be in section B “project description”. (max. 250 words, approximately 1/2 page)

The Djeffara/Jifarah Aquifer System [1] is a large transboundary coastal aquifer shared by Tunisia and Libya, underlying approximately 43,000 km² of the south-eastern Tunisian and north-western Libyan coastal plain. The aquifer system constitutes a critical source of water for irrigated agriculture, domestic supply, industry, tourism, and associated livelihoods, including in highly water-stressed areas of both countries. Hydrologically, the system consists of interconnected shallow and deeper aquifers with limited natural recharge and strong sensitivity to over-abstraction and seawater intrusion. Despite its hydrogeological connection to the wider North-Western Sahara Aquifer System (NWSAS), the Djeffara/Jifarah remains a distinct coastal aquifer system that is not formally managed under existing regional cooperation mechanisms. The aquifer faces accelerating groundwater over-abstraction, seawater intrusion, pollution risks, and climate-related recharge decline driven by agricultural expansion, demographic pressures, and increasing water demand.

Progress toward sustainable and coordinated management is constrained by fragmented monitoring and modelling systems, weak cross-sectoral coordination, policy and regulatory gaps in abstraction control and pollution management, limited incentive structures, and insufficient investment alignment. Strengthening of national governance and coordinated transboundary measures are urgently required to address ongoing overdraft and salinization trends. The project is designed to help address these barriers by strengthening science-based decision-making, governance coordination, investment planning, and practical solutions supporting sustainable groundwater management.

The project is structured around four mutually reinforcing components:

Component 1 establishes the scientific and analytical foundation by strengthening integrated geological, hydrogeological and hydro-chemical modelling, harmonized monitoring and data systems, and preparation of a Transboundary Diagnostic Analysis (TDA) supporting evidence-based and science-to-policy decision-making. These activities will generate the knowledge, monitoring systems, and analytical products needed to support coordinated groundwater planning and decision-making.

Building on this knowledge base, Component 2 supports gender-responsive no-regret national actions - i.e. actions that deliver benefits for groundwater management and reduce risks such as over-abstraction, pollution, etc. while remaining effective under a wide range of future climate, socioeconomic, and policy scenarios- addressing urgent groundwater pressures of transboundary importance. The component also supports development of a jointly agreed Strategic Action Programme (SAP) endorsed by the two countries, consideration of bilateral institutional arrangements for coordinated aquifer management and their potential

inclusion in the SAP, together with early implementation support for such arrangements, and financing pathways supporting implementation of SAP priorities. These processes are expected to strengthen governance, coordination, and investment frameworks supporting sustainable transboundary groundwater management.

Building on these governance and planning processes, Component 3 will test gender-responsive and women-empowering agricultural and water management practices in priority areas to reduce groundwater stress, pollution, and salinization risks while generating practical lessons and project and investment fiches aligned with SAP priorities to support broader uptake and scaling through national budgets, development partner investments, and other financing sources. Pilot demonstrations will actively involve women, local communities, farmers, water user associations, and NGOs/CSOs to help ensure that technical solutions are inclusive, socially grounded, economically viable, and replicable across the Djefara/Jifarah Aquifer System.

Component 4 reinforces sustainability and uptake by strengthening gender-responsive institutional capacity, South–South learning, knowledge sharing, communication, and outreach across the project as a whole. Through capacity development, knowledge products, communication, and adaptive learning processes, the component will help sustain uptake of project tools, governance reforms, and investment pathways beyond the project period. Gender mainstreaming and inclusive stakeholder engagement approaches will be applied across all project components to support effective implementation and long-term sustainability of project results.

Together, these four components create mutually reinforcing pathways linking science, governance, demonstration, financing, and learning through science-to-policy (TDA-SAP) and demonstration-to-scaling approaches supporting integrated, sustainable, coordinated, and gender-responsive groundwater governance.

The project will bring 50,000 hectares under improved practices (Core Indicator 4) and place the Djefara/Jifarah Aquifer System under new or improved cooperative management (Core Indicator 7). Through pilot activities in priority areas (to be defined during PPG), it is expected to directly benefit approximately 32,000 people (equally distributed between women and men) (Core Indicator 11), while generating broader water and food security, ecosystem resilience, and climate adaptation co-benefits.

[1] The terminology “Djefara/Jifarah Aquifer System” reflects the distinct names used by Tunisia and Libya for the same aquifer system; “Djefara” is the designation commonly applied in past transboundary cooperation frameworks and scientific literature.

Indicative Project Overview

Project Objective

To enable science-based national and transboundary management of the Djefara/Jifarah Aquifer System, reducing groundwater overexploitation and salinization risks across Libya and Tunisia.

Project Components

Component 1: Knowledge generation, monitoring, and decision-support tools for the Djefara Aquifer System

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
1,225,103.00	10,309,998.00

Outcome:

Outcome 1.1: Transboundary aquifer modelling, monitoring and analysis inform science-based national and multi-country decision-making for the Djeffara shared Aquifer System.

Output:

Output 1.1.1 Updated integrated geological, hydrogeological, and hydro-chemical models of the Djeffara Aquifer System, incorporating climate change considerations

Output 1.1.2: A groundwater monitoring and information management system for shared waters, designed and agreed upon, including harmonized protocols, optimized national and shared monitoring networks, and an operational data-exchange platform.

Output 1.1.3: A Transboundary Diagnostic Analysis (TDA) for the Djeffara Aquifer System completed and agreed upon, including governance and incentive gaps across key water-using sectors along the source-to-sea continuum, and considering climate change.

Component 2: National and transboundary aquifer governance and coordination frameworks.

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
870,000.00	5,467,262.00

Outcome:

Outcome 2.1: Policy, institutional and management frameworks strengthened at national and transboundary levels to promote coordinated responses to priority groundwater risks in the Djeffara/Jifarah Aquifer System.

Outcome 2.2: Financing frameworks and investment pathways for sustainable management of the Djeffara/Jifarah Aquifer System strengthened.

Output:

Output 2.1.1: No-regret national-level policy and management actions identified and agreed upon, with their initial implementation supported by countries and relevant stakeholders. These actions will be informed by gender-responsive and socially inclusive governance approaches and will address urgent groundwater pressures with transboundary implications.

Output 2.1.2: A Strategic Action Programme (SAP) for the Djeffara/ Jifarah System jointly developed and endorsed by the countries.

Output 2.1.3: Options for a bilateral institutional arrangement for coordinated management of the Djeffara /Jifarah Aquifer System developed and presented to the two countries for consideration and inclusion in the SAP.

Output 2.2.1: Financing framework built to support implementation of the Strategic Action Program.

Component 3: Pilot demonstrations for water and food security considering climate variability

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
1,330,000.00	14,464,997.00

Outcome:

Outcome 3.1: Demonstrations of agricultural and water solutions in priority areas inform pathways for scaling sustainable management of the shared Djeffara/Jifarah Aquifer System

Output:

Output 3.1.1: Gender-responsive and women-empowering traditional and/or novel practices to address management issues demonstrated in priority areas of the Djeffara/Jifarah Aquifer System, including sustainable agricultural practices (e.g., crop diversification and smart/precision agriculture) and water practices (e.g., non-conventional water use, aquifer recharge, groundwater level monitoring, and improved irrigation water management approaches)

Output 3.1.2: Project and investment fiches developed for the implementation of priority climate resilient water and food security infrastructure investments

Component 4: Knowledge management, learning and communication

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
570,515.30	3,036,666.00

Outcome:

Outcome 4.1: Capacity-development, knowledge management and learning, communication and outreach, effectively support achievement of project objectives.

Output:

Output 4.1.1: Gender responsive targeted capacity development and learning programmes implemented for sub-national and national stakeholders to support application of project tools and approaches

Output 4.1.2: South–South experience sharing, peer learning, and best-practice exchange facilitated with relevant regional and global initiatives to inform integrated and gender responsive groundwater governance and management

Output 4.1.3: Project visibility and knowledge sharing enhanced through a project website and knowledge products, with lessons learned disseminated via IW:LEARN, including participation in IW Conferences and production of Project Experience Notes

Output 4.1.4: A strategic and gender responsive communication and outreach plan, developed and implemented.

M&E

Component Type	Trust Fund
Technical Assistance	GET
GEF Project Financing (\$)	Co-financing (\$)
210,295.70	490,000.00

Outcome:

Outcome 5.1: Effective project implementation, monitoring and reporting based on adaptive management and lessons learned

Output:

Output 5.1.1: A gender-responsive project monitoring, evaluation and adaptive management system established and operational, including annual PIRs completed

Output 5.1.2: Mid-Term Review and Terminal Evaluation conducted

Component Balances

Project Components	GEF Project Financing (\$)	Co-financing (\$)
Component 1: Knowledge generation, monitoring, and decision-support tools for the Djefara Aquifer System	1,225,103.00	10,309,998.00
Component 2: National and transboundary aquifer governance and coordination frameworks.	870,000.00	5,467,262.00
Component 3: Pilot demonstrations for water and food security considering climate variability	1,330,000.00	14,464,997.00
Component 4: Knowledge management, learning and communication	570,515.30	3,036,666.00
M&E	210,295.70	490,000.00
Subtotal	4,205,914.00	33,768,923.00
Project Management Cost	210,296.00	1,687,737.00

Total Project Cost (\$)

4,416,210.00

35,456,660.00

Please provide justification

PROJECT OUTLINE

A. PROJECT RATIONALE

Briefly describe the current situation: the global environmental problems and/or climate vulnerabilities that the project will address, the key elements of the system, and underlying drivers of environmental change in the project context, such as population growth, economic development, climate change, sociocultural and political factors, including conflicts, or technological changes. Describe the objective of the project, and the justification for it. (Approximately 3-5 pages) see guidance here

Context and overview

The Djeffara/Jifarah Aquifer System is a large transboundary coastal aquifer system shared between Tunisia and Libya, underlying the Djeffara/Jifarah/Jefara coastal plain between the Mediterranean Sea and the Dahar–Jabal Nafusa mountains. The system covers an area of nearly 43,000 km² (Libya: 21,000 km²) (Tunisia: 22,000 km²), making it one of the most socio-economically important coastal groundwater systems in the southern Mediterranean region (OSS, 2020). The system lays to the North of the North-Western Sahara Aquifer System (NWSAS) and plays a critical role in regional groundwater dynamics, with the Dahar–Jabal Nafusa mountains corresponding to anticlines that structurally separate the plain from the NWSAS “Continental Intercalaire” and “Complexe Terminal” aquifers, see figure 1. Although hydrologically connected as its northern discharge zone, the Djeffara/Jifarah Aquifer System is not formally managed under existing NWSAS cooperation mechanisms.

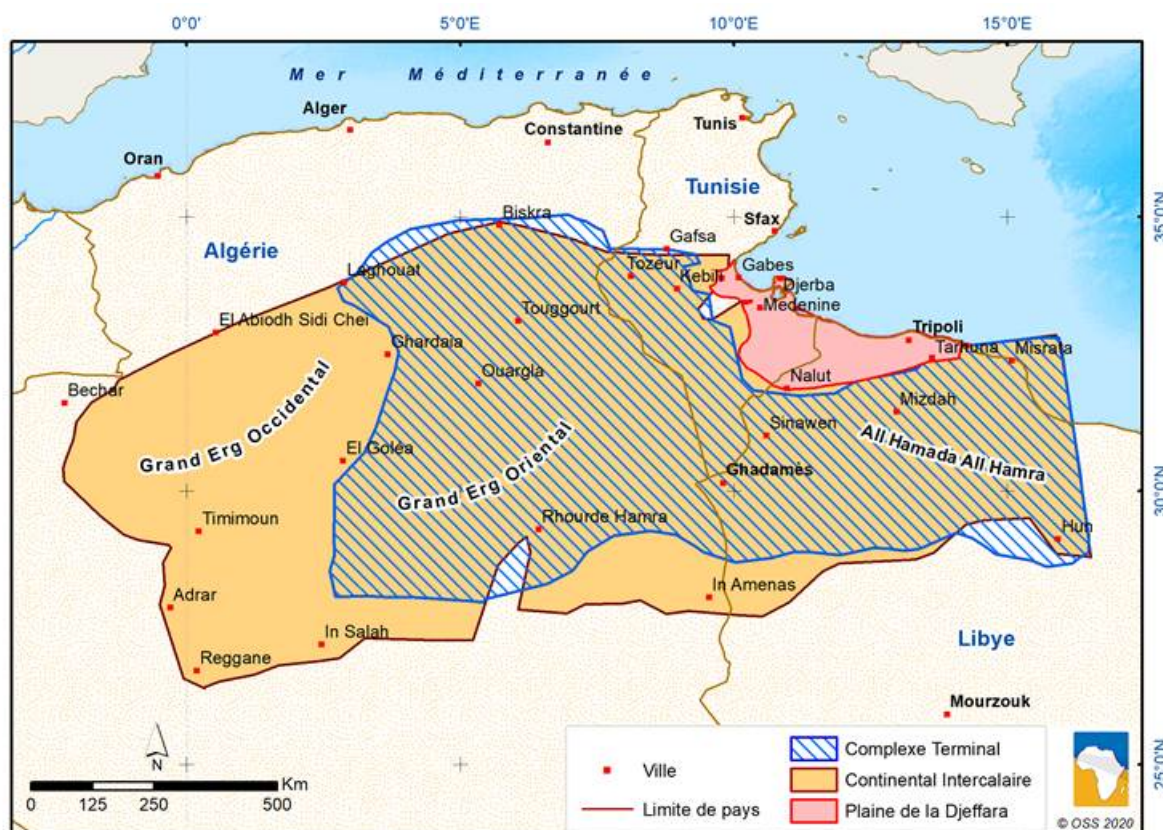


Figure 1: Indicative extent of the separate Djefara/Jifarah Aquifer System within the regional groundwater context of the North-Western Sahara Aquifer System (Continental Intercalaire and Complex Terminal Aquifer systems). Source: Sahara and Sahel Observatory (OSS), adapted from materials presented in “New prospects for improving knowledge and strengthening the resilience of the Tunisian-Libyan Djefara”, available at: <https://www.oss-online.org/en/node/448>

The Djefara/Jifarah Aquifer System is a multilayered groundwater system, comprising shallow unconfined and deeper semi-confined aquifers of varying hydraulic and hydro-chemical characteristics. Recharge is generally limited and spatially heterogeneous, occurring through diffuse and focused infiltration during episodic rainfall events, as well as through subsurface inflows at system boundaries, including hydraulic interactions with the NWSAS. Along the coast, intensive abstraction has altered natural hydraulic gradients, increasing the system’s vulnerability to seawater intrusion and salinization (Gonçalvès, J. et al., 2021).

Groundwater from the Djefara/Jifarah Aquifer System constitutes the primary source of water for domestic supply, irrigated agriculture, industry, and tourism infrastructure across much of southern Tunisia and north-western Libya. In Libya, the Djefara/Jifarah Aquifer System supports major economic and demographic hubs, producing more than half of the country’s agricultural output and covering about half of Libya’s population (Sadeg et al., 2020). On the Tunisian side, the Djefara/Jifarah Aquifer System covers the South-Eastern coastal area, with co-dependencies across agriculture and coastal/oasis production, tourism development, and the Gabès industrial pole where the chemical sector is concentrated focusing on phosphate processing.^{[2]¹}

Over the past decades, the Djefara/Jifarah Aquifer System has been subject to intensifying abstraction pressures. Groundwater withdrawals increased from approximately 200 million m³/year in the 1960s to nearly 1.4 billion m³/year by the early 2000s, while estimated natural recharge is around 600 million m³/year. Agricultural production is a direct driver with approximately 90 percent of extracted groundwater being used for irrigated agriculture, resulting in persistent abstraction in excess of recharge. These trends have led to declining piezometric levels, drying of springs, aquifer decompression, and increasing salinity of groundwater resources, with adverse impacts on water-dependent ecosystems and agricultural productivity (Gonçalvès, J. et al., 2021), (OSS, 2020), (Hamouda et al., 2013), CEDARE (2014). This means that across the Djefara/Jifarah Aquifer System, agriculture accounts for the overwhelming majority of groundwater withdrawals, making sustainable agricultural water management central to addressing aquifer depletion, salinization, and long-term water security.

Groundwater-related Issues of Concern in the Djefara/Jifarah Aquifer System

Overexploitation of groundwater resources: In Tunisia, withdrawals are concentrated in Gabès, followed by Médenine and Tataouine, supported by over 12,000 shallow wells and more than 1,100 deep boreholes, including some operating outside authorized conditions. Although consolidated data for Libya remain limited, assessments indicate similarly intensive reliance in the Jifarah Plain, where groundwater declines have accelerated from 0.4–0.5 m/year (1936–1956) to 2.5–3.5 m/year (1972–1993), with annual drops exceeding 3 meters in intensive irrigation zones. These trends confirm the cumulative and transboundary nature of abstraction pressures across the Djefara/Jifarah Aquifer System.

Marine intrusion and groundwater salinization: The coastal setting of the Djefara/Jifarah Aquifer System makes it particularly vulnerable to seawater intrusion, a process that has intensified as a result of prolonged over-pumping in coastal and peri-coastal zones and aggravated by sea-level rise. Alteration of natural hydraulic gradients has enabled saline seawater to migrate inland, leading to progressive aquifer salinization, especially in the Tripoli and Djerba–Zarzis areas. Quantitative assessments using GRACE satellite data estimate annual saline intrusion fluxes of approximately 147×10^6 m³/year near Tripoli and 47×10^6 m³/year near Djerba, highlighting the scale of the problem. Salinization reduces water suitability for drinking and irrigation, accelerates soil salinity buildup, and imposes economic costs on farmers and water utilities. Once established, marine intrusion is difficult to reverse, making it one of the most critical and potentially irreversible threats to the long-term viability of the Djefara/Jifarah Aquifer System (Gonçalvès, J. et al., 2021), (Sadeg et al., 2008).

Impacts on water-dependent ecosystems: Declining groundwater levels have caused the drying up of natural springs and reduced baseflows, disrupting ecological functions and ecosystem services. Increased salinity has altered habitat conditions, negatively affecting biodiversity and ecosystem productivity. Such ecosystems play a role in supporting livelihoods, regulating microclimates, and buffering against climate change. Their degradation reduces overall system resilience and increases vulnerability to droughts and extreme events. In general, there is a lack of assessments specific to the loss of groundwater-dependent ecosystems and loss of natural indicators that could otherwise signal early warning of aquifer stress (Gonçalvès, J. et al., 2021).

Groundwater pollution and geochemical degradation: Beyond salinization, the Djefara/Jifarah Aquifer System faces localized as well as diffuse groundwater pollution and geochemical degradation driven by natural processes and anthropogenic pressures. Groundwater quality is influenced by evaporation, mineral dissolution, mixing with paleo-waters, agricultural return flows, and inadequately treated wastewater. In Libya, many wastewater treatment plants operate below capacity or are non-functional, limiting safe reuse and increasing risks of surface and groundwater contamination. Elevated dissolved solids and nitrate concentrations have been documented in parts of the aquifer, particularly in shallow private wells in the

Libyan plain, where nitrate levels range from below 2 mg/l to over 50 mg/l. Although widespread arsenic contamination has not been confirmed, comparable regional aquifers show arsenic mobilization under similar geochemical conditions, indicating potential risk. Evidence highlights significant spatial variability, data gaps, and limited long-term monitoring (Kraiem et al., 2025).

Climate change and reduced recharge: Climate change acts as a systemic stress multiplier for the Djeffara/Jifarah Aquifer System, exacerbating existing pressures from overexploitation and salinization. The region is characterized by low and highly variable rainfall, high evapotranspiration rates, and limited natural recharge. Recent studies estimate average recharge at only 4.3 ± 2.7 mm/year, representing roughly 2 percent of annual rainfall, underscoring the aquifer's extreme sensitivity to climatic variability. Projected increases in temperature and changes in precipitation patterns are expected to further reduce effective recharge while increasing water demand for agriculture and domestic use. During drought periods, reliance on groundwater intensifies, accelerating depletion and salinity intrusion. Sea level rise further exacerbates salinity intrusion by increasing hydraulic gradient from seawater to freshwater. Integrating climate change considerations into groundwater assessment and management is therefore critical for maintaining water security and reducing long-term vulnerability in the Djeffara/Jifarah (Gonçalvès, J. et al., 2021).

Key System Drivers

Groundwater degradation in the Djeffara/Jifarah Aquifer System is primarily driven by the expansion and intensification of irrigated agriculture, which accounts for the majority of groundwater withdrawals. National food security objectives, combined with limited alternative water sources, have reinforced long-term reliance on groundwater for agricultural production. Population growth and urbanization in coastal Tunisia and north-western Libya further increase demand, while groundwater has historically served as a buffer during drought periods. Climate change —through declining rainfall and rising evapotranspiration and sea-level— further intensifies pressures on the system. Weak enforcement capacity, fragmented governance arrangements, and limited transboundary coordination constrain effective abstraction control and management of shared groundwater risks.

The project responds to these systemic pressures by strengthening policy, institutional, coordination, and financing frameworks for improved national and transboundary groundwater management. Through no-regret national actions, coordinated transboundary planning, and pilot demonstrations supporting climate-resilient groundwater and agricultural water management approaches, the project aims to strengthen the enabling environment for longer-term aquifer sustainability and climate resilience.

Institutional Context

Groundwater governance in the Djeffara/Jifarah Aquifer System is shaped by established national water authorities and evolving strategic frameworks in both Tunisia and Libya. In Tunisia, the Tunisian Ministry of Agriculture, Hydraulic Resources and Fisheries (MARHP) provides overall supervision of the public water domain, supported by the General Directorate of Water Resources (DGRE) for groundwater monitoring and aquifer management, Regional Commissariats for Agricultural Development (CRDAs) for local implementation, National Water Distribution Utility SONEDE for domestic supply, and the National Sanitation Utility (ONAS) for sanitation, and the General Directorate of Rural Engineering and Water Exploitation (DGGREE) for irrigation and wastewater reuse. The Water 2050 Strategy promotes desalination, demand management, managed aquifer recharge, digital monitoring, and economic instruments to address salinization and over-abstraction. These priorities are reinforced by Tunisia's National Strategy for Ecological Transition 2050, NDC 2021 (adaptation), National Biodiversity Action Plan 2030, and desertification and oasis strategies, all of which emphasize resilience, ecosystem protection, and efficient water use. Several

safeguarding and prohibition zones are already legally established within the Djefara/Jifarah Aquifer System.

In Libya, the Ministry of Water Resources, through the General Water Authority (GWA), leads groundwater monitoring and policy oversight, while the General Water and Sanitation Company main tasks and responsibilities include operation, maintenance, and water distribution for various purposes in cities and rural areas. Libya's National Water Security Strategy 2025–2050 is transitioning from formulation to implementation, with WEFE nexus assessments completed and early desalination and wastewater pilots underway. However, legal enforcement and regulatory integration remain ongoing. The main water legislation dates to Law No. 3 (1982) on water exploitation and Law No. 15 (2003) on water protection from pollution.

A 2013 Memorandum of Understanding between Tunisia and Libya provides a basis for bilateral dialogue, but no dedicated institutional mechanism currently manages the Djefara/Jifarah as a shared aquifer. Institutional overlaps, regulatory gaps, and capacity constraints in both countries limit enforcement of abstraction control, pollution regulation, and recharge protection.

Baseline scenario and associated baseline projects

As shown in table 1 (see below), the proposed Djefara/Jifarah Aquifer System project builds on a substantial baseline of regional, national, and sectoral initiatives. The project's added value lies in advancing coordinated management of the Djefara/Jifarah Aquifer System, complementing isolated national actions with transboundary analysis and governance while remaining coherent with evolving cooperation arrangements for the separate and wider NWSAS.

Table 1: List of ongoing, past and planned projects relevant to the Djefara/Jifarah Aquifer System (those including consideration of transboundary groundwater management in highlight)

Past projects (closed / completed)				
Title of project & funder	Institution (Funder / Implementer / Executing)	Investment size & period	Project focus area	Project objective
Protection of the Northwest Sahara Aquifer System (NWSAS) (GEF ID 1851)	Funder: GEF; Implementer: UNEP; Executing: OSS + national water authorities	GEF: USD 0.6M; Total: USD approx. 3 M; 1999–2004	Transboundary groundwater cooperation (NWSAS: Algeria–Tunisia–Libya)	Established enabling conditions, shared tools and cooperation mechanisms to protect/manage NWSAS (foundation for later legal/technical cooperation)
MENARID – Reducing risks to the sustainable management of the NWSAS (GEF ID 3645)	Funder: GEF; Implementer: UNEP; Executing: OSS + national partners	GEF: USD 0.96M; Total: USD approx. 3 M; 2009–2014	Risk reduction for NWSAS under MENARID umbrella (agriculture–groundwater nexus)	Promoted measures to reduce risks from unsustainable groundwater use and strengthen sustainable

				management approaches
GEO-AQUIFER knowledge improvement and the Northern Sahara Aquifer System (SASS) Project	Funder: African Water Facility (AWF / AfDB-managed); Implementer/Executing: OSS (regional)	The Sahara and Sahel Observatory (OSS) received a €487,000 grant; 2006-2009	Regional knowledge base / information system for sustainable transboundary aquifer management	Established an information/knowledge base supporting sustainable management at national and regional (NWSAS) levels
WACDEP (Water, Climate and Development Programme)	Funder : ADA, DFID, GWP Financing Partners Group Executing : GWP & GWP-Med	Total for North Africa : € 1.2 million Period : 2012-2019	Climate change mainstreaming (NWSAS : Algeria, Libya, Tunisia)	Evaluation of climate change risks and impacts on the NWSAS and their integration in the Hydrogeological Model Informed transboundary dialogue around the enhancement of the legal and institutional framework for joint water management
Making Water Cooperation Happen in the Mediterranean project	Funder : SIDA Executing : GWP-Med & UNECE	Sub-component on the NWSAS : € 480,000	WEFE Nexus & transboundary cooperation	Water-Energy-Food-Ecosystems assessment Enhance transboundary cooperation framework
Rural Drinking Water Supply Programme (Tunisia)	Funder: African Development Bank and the Agence Française de Développement (AFD)	TND 200.96 million or UA 90.81 million; 2012-2016	Areas like Sejnane and Medenine and Gabes for water supply	Aimed to provide safe, reliable water to underserved rural populations, reducing health risks and empowering women
EU FP7 – WELL (“Water and Energy for Life in Libya”)	Funder: European Commission (FP7); Implementer/Executing: Research consortium with Libyan General Water Authority focus	Total cost of € 556 003,20; 2012-2014	Libya water sector capacity and research cooperation	Strengthened General Water Authority capacity; defined research priorities; reinforced cooperation and research activities in water/energy

Tunisia – Second Water Sector Investment Project (IPWS II)	World Bank/IBRD: loan to government of Tunisia sector institutions	IBRD: approx. US\$ 31 M	IWRM; irrigation scheme management; rural drinking water	Strengthened integrated water management and service improvements—relevant to demand-side pressures affecting coastal aquifers and conjunctive use
ONAS treated wastewater quality improvement project	AfDB: to ONAS / Gov. Tunisia	€32.45m loan (2012 approval)	Wastewater treatment quality; reuse for irrigation	Improved treated wastewater quality for irrigation (reducing pollution pressure and supporting alternative supplies that can reduce groundwater abstraction)
ONAS IV sanitation project	EIB: loan to ONAS / Gov. Tunisia	Partly based on a loan agreement with the European Investment Bank (EIB) of 40 million Euros; 2007-2014	Wastewater collection/transfer and WWTP construction	Expanded/rehabilitated sanitation systems incl. Gabès, Médenine, Tataouine, Gafsa (directly in/adjacent to Djeffara influence area), supporting reduced contamination and pressure on aquifers.
Gulf of Gabes Marine and Coastal Resources Protection Project (P069460)	World Bank: to Gov. Tunisia/local actors	GEF grant of US\$ 6.31; 2004-2013	Coastal ecosystem protection incl. Gabes oasis / Jerba-Zarzis	Demonstrates coastal zone interventions and stakeholder platforms in the same broader geography—useful for synergies (ecosystems—groundwater link)
Programme d'assainissement des petites communes <10,000 habitants – Phase I (PAPC-I)	Funder: AfDB; Implementer/Executing: Government of Tunisia / sanitation institutions (ONAS and partners)	Financing from a combination of international multilateral banks (AfDB and EBRD) and national funds, totaling approximately	Expansion of sanitation coverage in smaller municipalities	Improved sanitary/environmental conditions via sanitation investments in small communes — baseline for groundwater quality

		€163 million.;2018-2023		protection and public health risk reduction
Improving the water supply in southeast Tunisia	Funder: KfW (German development finance); Implementer/Executing: Tunisian water sector institutions (typically SONEDE + Gov. Tunisia)	EUR 24.5 million, standard loan under Financial Cooperation; 2004-2021	Drinking water supply expansion / reliability (SE Tunisia)	Improve water supply services in southeast Tunisia — baseline shaping demand, service coverage, and system resilience in the wider Djefara region
Stabilization Facility for Libya (SFL)	Funder: multi-donor; Implementer: UNDP; Executing: municipalities / national entities via UNDP	Launched 2016 and closed in 2022; budget varies by donor rounds	Rehabilitation of basic services incl. water, sewage and sanitation	Restore basic services (including water/sewage) to rebuild trust and stabilize communities — baseline improvements that shape service reliability and demand-side pressures in Tripoli/Jifarah
Reform of the water sector and sustainable resource management in Tunisia (ARESET)	Funder : GIZ. Partnership with Ministère de l'Agriculture, des Ressources Hydrauliques et de la Pêche.	EUR 9.5m; implementation period 2020-2025.	Water sector reform; sustainable water resources management	To strengthen sustainable water management / reforms.
National Water Security Strategy and Data Management	Donor/Funders: EU/UNDP	USD 350k; ongoing	Strategic planning; data systems	Supports national water planning and data systems strengthening
Ongoing projects (active)				
Mediterranean Sea Programme (MedProgramme): “Enhancing Environmental Security” – Global Environment Facility (GEF ID 9607)	Funder: GEF; Implementing agencies: UNEP, EBRD. Executing partners are UNESCO/IHP, European Investment Bank (EIB), IUCN Med, GWP Med, WWF Med, University of Geneva-GRID Geneva, Plan Bleu, PAP/RAC, SCP/RAC, SPA/RAC and INFO/RAC.	GEF grant approx. USD 43 million; co-financing approx. USD 500+ million; Period: 2020–2026	The MedProgramme provides a regional baseline for coastal aquifer management and climate resilience, including UNESCO activities in Ras Jebel (Tunisia) and the Jifarah Plain (Libya) that are directly relevant to	To enhance environmental security and climate resilience in Mediterranean coastal zones through integrated management of water resources, coastal aquifers, ecosystems, and pollution pressures, while strengthening

			the Djefara Aquifer System.	regional cooperation and enabling science-based, investment-relevant decision-making
2025 Tunisia water-sector loans	Funder: The European Investment Bank (EIB) (with EU support); Implementer/Executing: SONEDE + Republic of Tunisia	A €22 million euro loan to Tunisia's national water utility Sonede and a €8 million loan to the Tunisian government; 2025-	Greater Tunis area	To support the completion of a drinking water supply project in Greater Tunis
EBRD – Southern Oases Hydraulic Infrastructure (Tunisia) - DTM 49250	Funder: EBRD; Implementer/Executing: Government of Tunisia / CRDAs & water institutions	EBRD: EUR 46 million in the form of a loan to the government of Tunisia; 2025 -	Southern governorates	The Project aims to restore and enhance the resilience of 37 oases ecosystems and to improve access to water resources across the four southern governorates
Climate-adapted, sustainable, and equitable water resource management project	Funder: GIZ; The project works with the Tunisian Ministry of Agriculture, Hydraulic Resources and Fisheries (MARHP) and with local and national water management authorities	GIZ: €5,500,000; 2025-2028	The republic of Tunisia, with activities implemented at national and sub-national (regional and local) levels in partnership with Tunisian water authorities and communities	To improve sustainable water governance in Tunisia through strengthened institutions, integrated water data systems, and inclusive, locally led water management and capacity-building
JICA – Treated wastewater reuse for industrial water (Gabes, Tunisia)	Funder: JICA; The projects works with ONAS (Office National de l'Assainissement) — Tunisia's national sanitation utility	JICA: grant up to 3,208 million yen; 2021-2028	Gabes Governorate (southern Tunisia)	To enable the stable use of recycled (treated) water as industrial water in Gabes by constructing a new advanced sewage treatment plant and ensuring its efficient operation and maintenance

World Bank – Sanitation PPP Support (Tunisia)	Funder: World Bank. The project works with ONAS / Gov. Tunisia	WBG: €113.6 million loan; 2022-2033	Wastewater service quality; PPP contract management	Strengthens wastewater management and service quality— reduces contamination risks and supports diversification away from groundwater in stressed coastal areas
Treated Wastewater Quality Improvement Project for Climate Resilience Building (PAQEE-RCC)	Funder: AfDB; Implementer/Executing: Government of Tunisia / ONAS	€81.9 million (loan); 2024 - 2028	Urban sanitation; treated wastewater quality and reuse	Improve treated wastewater quality and support reuse for agriculture/climate resilience — key baseline for reducing pollution loads and supporting non-conventional water supplies that can ease pressure on stressed groundwater systems
UNICEF's Water, Sanitation, and Hygiene (WASH) programme in Libya	Funder: UNICEF donors; works closely with the Libyan Ministry of Water Resources and the Ministry of Local Governance//municipal water entities	The total planned annual budget for WASH in Libya is approximately \$9.06 million; 2025-2026	Drinking water access, system rehabilitation, emergency WASH	Provide safe drinking water and rehabilitate deteriorated WASH facilities; supports resilience and reduces reliance on over-mined groundwater where supply systems fail
UNESCO-IHP ISARM (Internationally Shared Aquifer Resources Management) initiative in Africa	UNESCO-IHP (multi-agency with FAO, UNECE, OSS, etc.);	Launched early 2000s; ongoing as initiative	Internationally shared aquifer resources management	Provides internationally recognized approach and multi-agency platform for transboundary aquifer governance — this means the UNESCO-IHP initiative is useful when developing the baseline framing
ACQUAOUNT	EU-funded PRIMA Coordinated by CMCC Foundation (Italy),	€2.47 million from 2017 to 2025	Locations: Italy, Jordan, Lebanon,	To improve Integrated Water Resources

Adapting to Climate change by Quantifying optimal Allocation of Resources and Socio-Economic inTerlinkages	with a consortium of 9 partners.		Tunisia (Djeffara Plain)	Management (IWRM) and sustainable irrigation through IoT, digital tools, and data modeling
GEEST – Gestion Équilibrée des Eaux Souterraines en Tunisie	Funder: Walloon Region. Implementer: Enabel; SWDE technical expertise; MARHP/DGRE/CRDAs beneficiaries	EUR 1.65m. Implementatit on period: 2026-2028	Groundwater monitoring/data platforms + governance/capacity + awareness (Tunisia)	Improvement of data-driven sustainable groundwater management capacity. This baseline if of relevance for project outputs spanning models, monitoring and information management systems along with the TDA.
Strengthening water regulatory and institutional framework in Libya	African Development Bank / Ministry of Water Resources	USD 250k; ongoing	Water governance; legal frameworks	Supports development of regulatory and institutional frameworks for water management
MerWat-2 – Water and agricultural data systems	FAO / Government of Libya	USD 1M; ongoing	Water data systems; geospatial monitoring	Strengthens water data platforms and decision-support systems relevant to groundwater monitoring and management
RENEWAL – Climate Resilience to Water Scarcity	Government of Libya with IFAD / UNOPS	USD 9.2M; ongoing	Climate resilience; water scarcity	Supports climate-resilient water management and adaptation measures in water-scarce regions
Sustainable Transition for Energy and Environment	Donor: EU / BMZ / GIZ with Government of Libya	USD 14.3M; ongoing	Water–energy–environment nexus	Supports sustainable resource management, including water governance, climate

Partnership (STEP)				resilience, and institutional strengthening
REGLEAU – Regional water management and wastewater reuse programme	Main funder: MARHP / DGRE with GIZ and partners	Ongoing.	Wastewater reuse; regional water planning	Supports reuse of treated wastewater and integrated water management, reducing pressure on groundwater resources in the Djefara system
National Water and Soil Conservation Programme (CES)	Funder: MARHP (implemented by DGAFTA and regional services)	Ongoing national programme	Runoff management and groundwater recharge infrastructure (jessours, tabias, recharge systems)	Runoff management and groundwater recharge infrastructure (jessours, tabias, recharge systems)
Tunisian or regional research programmes and institutional scientific monitoring of the Djefara Basin	Implemented by Tunisian research institutions including, IRA (Medenine), INAT and INRAP in collaboration with national water authorities and international research partners (e.g., PRIMA, IAEA, OSS)	Multiple research initiatives and programmes; ongoing over the past decade with several active projects	Hydrogeological modelling, groundwater monitoring, water quality analysis, agricultural water management and climate resilience	Provide scientific knowledge and technical capacity for understanding groundwater dynamics, recharge processes, water quality evolution, and sustainable water management options in the Djefara Basin, including modelling tools, decision-support systems and monitoring data that inform aquifer management and transboundary cooperation efforts.

How the project fits within the current landscape of investments

Regional baseline: UNEP-implemented GEF projects on the North Western Sahara Aquifer System (NWSAS) (GEF IDs 1851 and 3645), executed by the Sahara and Sahel Observatory (OSS), constitute the cornerstone of the regional baseline. These initiatives established a shared scientific knowledge base for the NWSAS, including regional databases, GIS tools, harmonized assessment methodologies, and numerical hydrodynamic and hydro-chemical models. Within this framework, the Djefara/Jifarah Aquifer System was analyzed as the northern coastal discharge zone of the deeper Continental Intercalaire and Complex

Terminal aquifers, reflecting hydrogeological connectivity while maintaining a distinctly separate system with salinity-sensitive characteristics. Complementary efforts such as the OSS-led GEO-AQUIFER project, financed by the African Water Facility (AWF), have further strengthened regional data systems and analytical capacity relevant for transboundary groundwater management.

More recent regional programmes further strengthen the baseline for coastal aquifer management and climate resilience. The GEF Mediterranean Sea Programme (MedProgramme) provides a comprehensive regional platform addressing coastal water security, pollution reduction, and ecosystem protection, including UNESCO-led activities on coastal aquifers in Tunisia and Libya, the latter being directly relevant to the Djeffara/Jifarah system. Broader regional initiatives under the Barcelona Convention framework and associated technical partnerships also support integrated land–sea management, groundwater quality protection, and monitoring approaches applicable to coastal aquifers.

From an institutional perspective, regional cooperation on shared groundwater resources has historically been facilitated through the NWSAS Consultation Mechanism established in 2008 and hosted by OSS, with a primary focus on the Continental Intercalaire and Complex Terminal aquifers that define the core NWSAS system. More recently, in 2024, Algeria, Tunisia, and Libya have taken steps to further strengthen transboundary groundwater cooperation through the establishment of an updated trilateral cooperation framework, although its operational modalities are still evolving.

While hydro-geologically interconnected with the NWSAS, the Djeffara/Jifarah Aquifer System remains a distinct coastal aquifer that is not formally managed under existing consultation mechanisms. As a result, current regional coordination frameworks are not tailored to the coastal and salinity-sensitive dynamics of the Djeffara/Jifarah Aquifer System, nor to acute risks such as overdraft, seawater intrusion, and groundwater-dependent ecosystem degradation. This creates a management gap and strong rationale for an intervention focused specifically on the Djeffara/Jifarah Aquifer System, designed to remain compatible with broader NWSAS cooperation frameworks while allowing Tunisia and Libya to define appropriate institutional and management arrangements for its sustainable management.

In parallel, the Barcelona Convention system and its protocols administered under UNEP/MAP - particularly the Land-Based Sources and Activities (LBS) Protocol and the Integrated Coastal Zone Management (ICZM) Protocol - provide an important regional policy framework for addressing pollution from terrestrial and groundwater sources, strengthening coastal ecosystem resilience, and promoting coordinated land - sea resource management across the Mediterranean region. Relevant Regional Activity Centres, including the Priority Actions Programme Regional Activity Centre (PAP/RAC), support implementation of these regional priorities through technical guidance, ICZM approaches, and regional cooperation activities. In this context, the project complements – and is expected to substantially contribute to - ongoing Barcelona Convention processes by strengthening science-based transboundary coastal aquifer governance, groundwater monitoring, salinization and pollution assessments, and climate-resilient management approaches within the Djeffara/Jifarah Aquifer System. The project is also expected to generate practical experience, technical knowledge, and data relevant to broader Mediterranean coastal groundwater management, ICZM, and LBS Protocols implementation priorities.

Coastal aquifer management and resilience baseline initiatives: Through its child projects, the GEF-supported Mediterranean Sea Programme (MedProgramme) advances coastal governance, WEF nexus approaches, and pollution mitigation relevant to coastal aquifer sustainability. UNESCO's MedProgramme Child Project 2.1 is of particular relevance, supporting coastal aquifer assessment, monitoring and planning in Ras Jebel

(Tunisia) and the Jifarah Plain (Libya), including efforts to address salinization and marine intrusion. While MedProgramme does not provide a transboundary management framework for the Djefara/Jifarah Aquifer System, it establishes a technical baseline that can be aligned with this proposed GEF IW intervention.

National and sectoral baseline investments: At the national level, a range of International Finance Institution and bilateral-supported investments contribute to water security and groundwater governance in areas influenced by the Djefara/Jifarah Aquifer System. In Tunisia, these include World Bank IWRM reforms; AfDB- and EIB-financed sanitation and wastewater reuse investments; JICA-supported wastewater treatment in Gabès; and governance and regulatory support from partners such as GIZ, EBRD, and Belgian cooperation programmes. Additional investments include large-scale irrigation and groundwater infrastructure rehabilitation programmes supported by EBRD, as well as national programmes for runoff management and groundwater recharge (e.g., jessours, tabias, and related structures) implemented under the Water and Soil Conservation Programme in southern governorates. Ongoing initiatives also include regional water management and wastewater reuse programmes (e.g., REGLEAU), alongside water sector reform, groundwater governance, and monitoring support projects (e.g., ARESET and GEEST). In Libya, these include large-scale programmes such as the STEP partnership (EU/BMZ/GIZ) and the RENEWAL programme (IFAD/UNOPS), as well as initiatives supporting water strategy development, regulatory strengthening, and data systems (e.g., EU/UNDP, AfDB, FAO, UNESCO). Complementary programmes such as MerWat-2 support water and agricultural data systems and geospatial platforms relevant to groundwater monitoring and planning.

A strong scientific baseline exists in Tunisia through research institutions such as IRESA, INGRES, IRA, INAT, and INRAP, which have contributed to groundwater modelling, water quality analysis, and decision-support systems for the Djefara basin. Several international research programmes (e.g., PRIMA-funded projects) and technical partnerships have also generated monitoring data, climate adaptation approaches, and tools relevant to sustainable groundwater and agricultural water management.

While these past and ongoing investments strengthen water sector governance, groundwater monitoring, climate-water planning, and service delivery, they remain largely sectoral, nationally bounded, or regionally thematic in scope and do not systematically address the transboundary coastal aquifer risks specific to the Djefara/Jifarah Aquifer System. Nor do they establish a dedicated Tunisia–Libya mechanism or TDA/SAP-type framework for joint aquifer-system diagnosis, priority setting, and coordinated action.

Role of Stakeholders in the Djefara/Jifarah Aquifer System

Sustainable management of the Djefara/Jifarah Aquifer System requires coordinated action among national authorities, local institutions, resource users, and technical partners. In Tunisia, the Tunisian Ministry of Agriculture, Hydraulic Resources and Fisheries (MARHP), the General Directorate of Water Resources (DGRE), the General Directorate of Rural Engineering and Water Exploitation (DGGREE), the Regional Commissariats for Agricultural Development (CRDAs), SONEDE, and ONAS oversee groundwater monitoring, abstraction control, irrigation management, and wastewater reuse, while in Libya the Ministry of Water Resources and the General Water Authority (GWA) lead groundwater planning and regulation. The Tunisia Ministry of Women, Family, Childhood and Seniors (MFFCES) and relevant gender-related functions under Libya’s Ministry of Social Affairs also play important roles in supporting gender-responsive stakeholder engagement, women’s participation, and integration of gender considerations within groundwater governance, sustainable agriculture and local planning processes. Local governments influence land-use planning and recharge protection, with enforcement dynamics in Libya often shaped by decentralized governance arrangements. Farmers and water users are central actors given agriculture’s dominant share of groundwater abstraction, highlighting the need for improved practices, compliance, and demand

management. Research institutions provide modelling and technical expertise, while private sector actors—such as irrigation technology providers and agribusinesses—shape water-use practices. Civil society organizations support awareness raising, stakeholder dialogue, and gender-responsive engagement in groundwater management.

Future narrative without and with GEF support

Without the proposed GEF intervention, management of the Djeffara/Jifarah Aquifer System would remain largely fragmented and reactive. Groundwater abstraction pressures, seawater intrusion, pollution contamination, and recharge decline would continue to intensify, as current efforts focus primarily on national water supply and infrastructure rather than coastal aquifer resilience and transboundary coordination.

In this likely scenario, data gaps, limited monitoring coverage, and inadequately refined models would persist, constraining the ability of Tunisia and Libya to anticipate impacts, align policies, and prioritize investments at the Djeffara/Jifarah Aquifer System scale. As a result, groundwater quality degradation and ecosystem impacts would continue largely unmanaged, increasing risks to irrigated agriculture, coastal livelihoods, and groundwater-dependent ecosystems under climate stress.

In a second scenario, climate change and increasing climate variability will further exacerbate pressures on the Djeffara/Jifarah Aquifer System, through rising temperatures, increased evapotranspiration, sea level rise and reduced and more variable recharge. These trends will intensify overdraft and salinization risks, particularly in the coastal zones, while increasing uncertainty for water planning and agricultural production. In the likely event that both scenarios unfold simultaneously, groundwater quality and availability will continue to decline, increasing water security risks and management costs.

With GEF support, the project will enable coordinated, science-based management of the Djeffara/Jifarah Aquifer System. By strengthening the knowledge base and establishing the institutional, policy, and management frameworks required for joint Tunisia–Libya decision-making, the project will advance priority reforms and investment pathways to curb over-abstraction, limit seawater intrusion, pollution, and address climate-related recharge decline.

Project Objective and barriers to achieving it

The project objective is to enable science-based national and transboundary management of the Djeffara/Jifarah Aquifer System, reducing groundwater overexploitation and salinization risks across Libya and Tunisia..

Despite a growing recognition of the risks of overexploitation, pollution and salinization, the Djeffara/Jifarah Aquifer System continues to face systemic and interlinked barriers that constrain effective governance, management and investment across sectors and borders. These barriers limit the translation of existing scientific knowledge and institutional arrangements into coordinated science-based action and undermine efforts to address the root causes of transboundary groundwater degradation and build long term climate resilience in the Djeffara/Jifarah Aquifer System.

Barrier 1: Insufficient data, knowledge, analytical tools, and understanding of the benefits of transboundary cooperation at the aquifer-system scale: Despite past investments, critical gaps remain in groundwater data, monitoring coverage, and model resolution for the Djeffara/Jifarah Aquifer System. Existing hydrodynamic and hydro-chemical models are not yet sufficiently refined to support scenario analysis, forecasting, and investment prioritization, particularly under climate change. Information on groundwater uses, abstraction

patterns, salinity dynamics, and ecosystem linkages remain incomplete and uneven across borders, including limited sex-disaggregated information on water use, livelihoods, and vulnerability, constraining science-based decision-making and limiting understanding of the long-term benefits of coordinated transboundary groundwater management and cooperation.

Barrier 2: Weak integration of monitoring, data sharing, and decision-support across sectors and borders: Groundwater monitoring, data management, and analysis remain fragmented across institutions and sectors, with limited regular data exchange between Tunisia and Libya. The absence of integrated, cross-sector monitoring and shared decision-support approaches constrains the translation of technical information into coordinated policy and management responses across the Djeffara/Jifarah Aquifer System, including the consideration of differentiated impacts on women and men in water-dependent livelihoods.

Barrier 3: Limited institutional coordination and unclear operational roles specific to the Djeffara/Jifarah Aquifer System: There is no established institutional framework for the coordination of the management Djeffara/Jifarah Aquifer System nor have the countries decided if/how a Djeffara/Jifarah Aquifer System legal and institutional framework should be connected to the NWSAS. The Djeffara/Jifarah Aquifer System national institutions primarily act within sectoral and national mandates, resulting in reactive, uncoordinated responses to transboundary aquifer risks and limited joint planning for abstraction control, salinity management, and climate adaptation, with limited inclusion of local stakeholders, including women, in consultation and decision-making processes.

Barrier 4: Limited implementation and pathways for scaling integrated climate-resilient agricultural and groundwater management approaches for water and food security: Climate-resilient agricultural and water management practices in the Djeffara/Jifarah Aquifer System remain limited and fragmented, despite irrigated agriculture accounting for the vast majority of groundwater withdrawals across the aquifer. Integrated approaches that could contribute to reducing groundwater stress and improving resilience - including improved irrigation water management approaches, groundwater demand management, aquifer recharge measures, conjunctive use of conventional and non-conventional water resources, and climate-resilient agricultural practices - are not systematically implemented or scaled, particularly in coastal areas affected by salinization and declining recharge. As a result, practical pathways to test, demonstrate, and scale integrated agricultural and water solutions remain limited, constraining progress toward climate-resilient water and food security outcomes across the transboundary aquifer system.

Barrier 5: Limited identification and prioritization of coordinated measures and investments, including through no-regret national actions that translate into near-term progress: In the absence of a dedicated Djeffara/Jifarah Aquifer-focused investment framework, priority management measures are not systematically identified, assessed, or aligned across sectors and borders. This constrains the ability of national institutions to translate existing knowledge and political commitment into tangible actions and investments, limits access to coherent financing pathways, and reduces the effectiveness of ongoing water, agriculture, and coastal resilience initiatives in addressing cumulative groundwater risks, including over-abstraction, pollution, salinization, and inequitable access to water-related benefits.

Barrier 6: Inadequate science-policy dialogue and capacity to support joint decision-making: Opportunities for structured science-policy dialogue, targeted capacity building, and learning remain limited, particularly at the interface between technical experts, planners, and decision-makers. As a result, awareness of aquifer-scale risks, climate impacts, and response options is uneven, constraining the uptake of e.g., cost efficient monitoring, sustainable abstraction practices, demand-side measures, and climate-resilient solutions, and limiting opportunities to strengthen inclusive participation and leadership in groundwater management.

[\[2\] Médenine \(Governorate, Tunisia\) - Population Statistics, Charts, Map and Location](#)

B. PROJECT DESCRIPTION

Project description

This section asks for a theory of change as part of a joined-up description of the project as a whole. The project description is expected to cover the key elements of good project design in an integrated way. It is also expected to meet the GEF's policy requirements on gender, stakeholders, private sector, and knowledge management and learning (see section D). This section should be a narrative that reads like a joined-up story and not independent elements that answer the guiding questions contained in the PIF guidance document. (Approximately 3-5 pages) see guidance here

Project Description

Theory of Change

The project objective is to enable science-based national and transboundary management of the Djeffara/Jifarah Aquifer System, reducing groundwater overexploitation and salinization risks across Libya and Tunisia.

The project's Theory of Change (see figure 2) is structured around five mutually reinforcing pathways: (i) science-to-policy knowledge integration; (ii) targeted policy interventions and early implementation of no-regret measures to strengthen the enabling environment across key sectors; (iii) transboundary strategic and institutional alignment; (iv) demonstration-to-scaling investment pathways; and (v) capacity development and adaptive governance. Together, these pathways ensure that improved knowledge translates into tangible governance interventions, coordinated transboundary action, and scalable investments.

Further, the Theory of Change rests on overcoming the identified barriers that prevent countries from translating existing cooperation foundations and technical understanding into timely policy actions, joint planning, and investment pathways that reduce aquifer-scale risks and protect groundwater-dependent ecosystems.

The project has four components that collectively address the barriers and deliver the project objective.

Component 1: Knowledge generation, monitoring, and decision-support tools for the Djeffara/Jifarah Aquifer System

Component 1 strengthens the science-to-policy pathway by improving the availability, quality, coherence, and usability of aquifer-scale information and analytical tools (pathway 1), directly responding to Barriers 1 and 2. Through Outputs 1.1.1–1.1.3, the project will update integrated geological, hydrogeological, and hydro-chemical models; optimize national monitoring systems and establish harmonized transboundary monitoring and data exchange protocols; and deliver a jointly agreed TDA integrating future demand scenarios considerations related to the state of the groundwater-dependent ecosystems, and pollution and climate risks. National institutions, technical agencies, research organizations, and relevant local stakeholders will contribute to monitoring, modelling, data-sharing, and TDA development processes through inclusive and gender-responsive consultation and technical engagement approaches. These outputs

provide the analytical and scientific basis required for coordinated reforms, investment prioritization, and transboundary planning.

Component 2: National and transboundary aquifer governance and coordination frameworks

Component 2 focuses on strengthening governance, coordination, and investment pathways to enable timely, coordinated action at national and bilateral levels (pathways 2 and 3), directly responding to Barriers 3 and 5. Outputs 2.1.1 and 2.1.2 support the identification and initial implementation of no-regret national actions and the development and endorsement of a Strategic Action Programme (SAP) addressing priority groundwater risks of transboundary importance. These processes will involve national authorities, sectoral institutions, local stakeholders, CSOs, women's organizations, and relevant technical actors through inclusive and gender-responsive policy dialogue, consultation, and planning processes. Building on these foundations, Output 2.1.3 will assess options for bilateral institutional arrangements for coordinated aquifer management for inclusion in the SAP, with support for initial implementation steps.

Under Outcome 2.2, Output 2.2.1 will build a financing framework to support implementation of the Strategic Action Program through identification and matching of suitable financing sources and instruments. Relevant national institutions, financing actors, development partners, and private sector stakeholders will contribute to the identification of investment priorities, financing needs, and scaling opportunities for climate-resilient groundwater and agricultural water management approaches. Together, Component 2 translates improved knowledge into immediate national action, strategic transboundary planning, institutional coordination, and investment pathways, directly strengthening the enabling environment for sustainable groundwater management across sectors.

Component 3: Pilot demonstrations for water and food security considering climate change variability

Component 3 operationalizes priority measures emerging from dialogues with local stakeholders, and Components 1 and 2, by testing practical agricultural and water solutions that generate evidence for scaling and informing sustainable aquifer management pathways (pathway 4), directly responding to barrier 4. Through Output 3.1.1, gender responsive and women empowering pilot demonstrations will assess technical performance, climate robustness, and enabling conditions for uptake under conditions of groundwater stress, especially resulting from the agriculture sector. Pilot demonstrations will actively engage farmers, water users, women practitioners, CSOs, local authorities, and relevant technical institutions through inclusive and gender-responsive consultation, implementation, and capacity-development approaches. Output 3.1.2 will align project fiches with emerging pilot results/SAP priorities and inform parts of the SAP financing framework, thereby informing national implementation and scaling pathways while exploring financing possibilities. Relevant national institutions, financing actors, development partners, and private sector stakeholders will contribute to the fiches. Together, Component 3 generates practical evidence and investable solutions that link local action with national interventions and transboundary strategic planning, ensuring that pilot activities translate into scalable impact rather than isolated demonstrations.

Project Component 4: Knowledge management, learning and communication

Component 4 reinforces uptake and sustainability by strengthening institutional communication, and learning capacities needed to support implementation and uptake of tools, no-regret actions, and investment pathways developed under Components 1–3. Through targeted training, South–South exchanges, IW:LEARN engagement, communication and outreach activities and knowledge-management processes. Outputs 4.1.1–4.1.4 will strengthen gender-responsive capacity, knowledge generation and sharing, communication, coordination, institutional learning and uptake across national and bilateral levels. National institutions, local stakeholders, CSOs, women's organizations, technical agencies,

and relevant regional partners will participate in capacity-development, learning, and knowledge-sharing activities to support long-term sustainability of project results.

M&E: the project M&E framework under Outcome 5.1 will support gender-sensitive adaptive management, accountability, reporting, evaluations and lessons learned throughout implementation.

Wider changes and impacts: Achievement of the immediate project outcomes will contribute to wider systemic changes over the medium and long term. Outcome 1.1 (Component 1) will strengthen the science-to-policy interface by enabling national and bilateral authorities to routinely use harmonized modelling, monitoring, and analytical tools to assess groundwater risks and guide coordinated decision-making (MTO1). Outcome 2.1 (Component 2) will contribute to tangible national action and bilateral coordination mechanisms that address over-abstraction, salinization, and pollution risks, while embedding groundwater sustainability within cross-sector policy, regulatory, and management frameworks (MTO2). Outcome 2.2 (Component 2) will strengthen financing and scaling pathways supporting implementation of priority SAP actions and climate-resilient groundwater and agricultural water management approaches (MTO2). Outcome 3.1 (Component 3) will generate tested agricultural and water management solutions that inform local management approaches, national programmes, and financing pipelines, supporting scalable pathways for improved climate-resilient groundwater and agricultural management practices that reduce groundwater stress and enhance water and food security (MTO3). Outcomes 4.1 (Component 4) and 5.1 will ensure strengthened institutional capacity, communication and knowledge-sharing systems, gender-responsive implementation, and adaptive monitoring and learning process that support sustained uptake and long-term governance improvements (MTO4).

Together, achievement of the immediate project outcomes is expected to contribute to the project objective of enabling science-based national and transboundary management of the Djeffara/Jifarah Aquifer System to reduce groundwater overexploitation and salinization risks across Libya and Tunisia, thereby contributing to GEF IW Objective 3: Enhance water security in shared freshwater ecosystems. Over the medium and longer term and complemented by parallel national and donor-supported initiatives, the project is expected to contribute to water security, food security, and ecosystem health supported through science-based national and transboundary management of the Djeffara/Jifarah Aquifer System.

However, achievement of the immediate project outcomes, and subsequent progress toward the project objective and longer-term impacts, depends on several wider assumptions being met (indicated by an A in the project Theory of Change), namely that:

- A1: The improved scientific knowledge on groundwater availability, quality, and risks generated through the project will be used by national and bilateral decision-makers to strengthen policy, legal, regulatory, and investment frameworks for sustainable groundwater management.
- A2: Key stakeholders across sectors (including agriculture, tourism, urban water supply and industry) are willing to engage in dialogue and transformation processes aimed at reducing groundwater over-abstraction, salinization, and pollution, even where this may require changes to existing practices, incentives, or short-term benefits. Mitigation measures include inclusive consultation processes, and support for feasible no-regret management actions.
- A3: Increased awareness, capacity, and access to decision-support tools among policymakers, regulators, water managers, and users will lead to tangible changes in institutional behavior, enforcement practices, and water-use decisions that address the root causes of aquifer degradation.

- A4: Demonstration and testing of climate-resilient agricultural and water management practices, supported by technical assistance and feasibility assessments, will be sufficient to inform project and investment fishes and encourage wider uptake and scaling under strengthened policy and financing frameworks.
- A5: As a general pre-condition, the project will effectively increase capacity and engage with IW:LEARN and relevant regional cooperation frameworks, including OSS and the Barcelona Convention, enabling access to knowledge products, peer learning, and technical support that reinforce project implementation and sustainability.

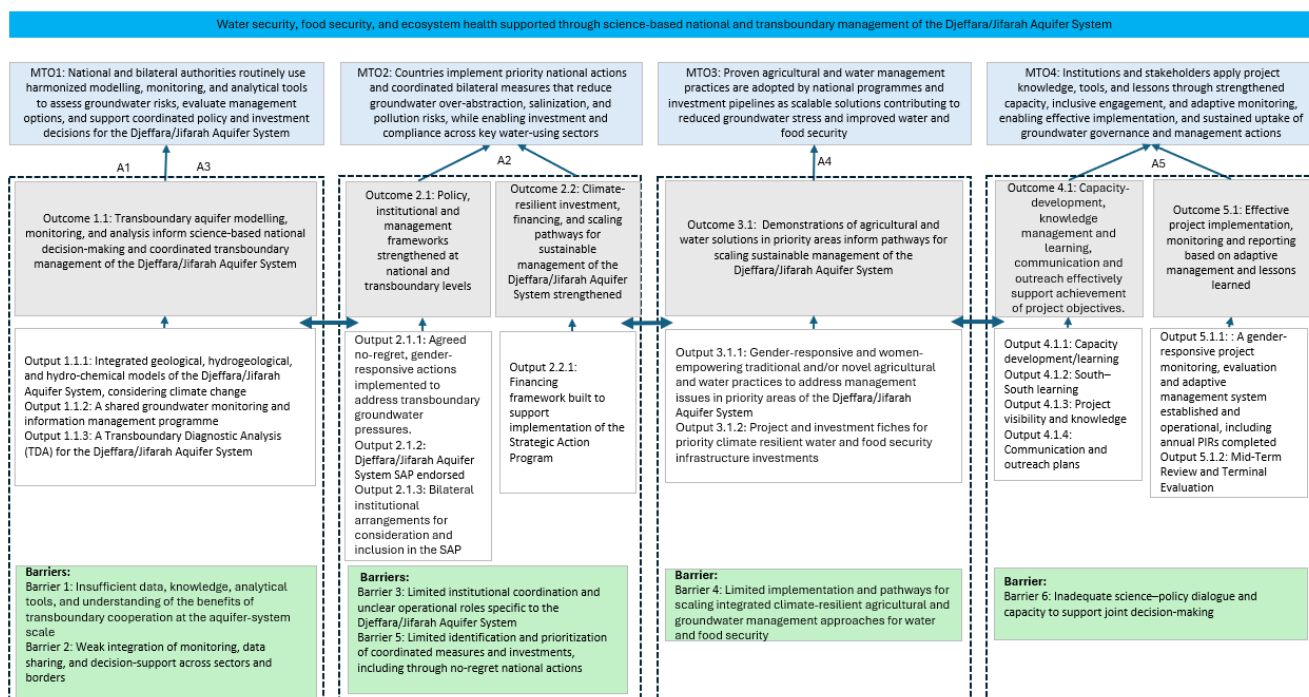


Figure 2: Theory of change for the Djefara/Jifarah Aquifer Project (A = Assumption)

Component 1: Knowledge generation, monitoring, and decision-support tools for the Djefara/Jifarah Aquifer System

Component 1 will strengthen the technical and institutional foundations required for science-based national and transboundary decision-making for sustainable management of the Djefara/Jifarah Aquifer System. Building on existing national datasets and past regional work, the component will address critical gaps in aquifer characterization, monitoring, and integrated analysis that currently limit the ability of Tunisia and Libya to assess risks and respond to pressures such as over-abstraction, salinization, pollution, and climate change.

Outcome 1.1: Transboundary aquifer modelling, monitoring, and analysis inform science-based national decision-making and coordinated transboundary management of the Djefara/Jifarah Aquifer System

This outcome will improve the availability, quality and usability of technical information and translate scientific evidence into policy-relevant analysis by linking hydrogeological and chemical assessment as well as assessment of impacts on aquifer-water-dependent ecosystems, with socioeconomic drivers, governance gaps, and climate risks .

Output 1.1.1: Updated integrated geological, hydrogeological, and hydro-chemical models of the Djefara/Jifarah Aquifer System, incorporating climate change considerations.

This output strengthens the technical basis for coordinated aquifer management by assessing the adequacy of existing models and the need for their update or the need for developing new ones so as to improve the overall reliability and policy relevance of model-based tools. Updated modelling will support science-based planning and transboundary decision-making under changing climate and development conditions. Tentative activities (the list will be reviewed and finalized in PPG stage) include: (i) Formulation of a working group comprising appointed representatives of institutions and organizations from both countries with mandates on generation of and use of modeling tools for the aquifer and its management to guide the development of and validate the work under this output; (ii) Assessing available models (iii) Collection of available field and secondary data such as meteorological and climatic, geological, socio-economic, land use, hydro-chemical, ecosystem related, geospatial (including remote sensing); (iv) Consolidation and updating of existing or development of new databases; (v) Improved characterization of aquifer geometry and recharge processes; (vi) Evaluation of abstraction under climate change scenarios; (vii) Integrated scenario analysis of groundwater availability, flow dynamics, salinity evolution, and system vulnerability under alternative development and climate conditions; (viii) Validation, documentation, and formal adoption of updated models; and (ix) Capacity-building activities to ensure training and participation of both women and men technical staff in modelling validation workshops and training processes. Tentative activities (v) – (vii) will depend on the availability of data; their implementation will be defined by the results of activity (ii) and (iii).

Output 1.1.2: A groundwater monitoring and information management programme for shared waters, designed and agreed upon, including harmonized protocols, optimized national and shared monitoring networks, and an operational data-exchange platform

This output will enable the enhancement of data reliability, comparability, and accessibility to support joint analysis and science-based management of shared groundwater resources. Activities will lay the ground for enhanced decision making, coordination and trust among the countries. Tentative activities include: (i) Formulation of a working group comprising appointed representatives of institutions and organizations from both countries to guide the development of and validate the work under this output; (ii) Review of existing national monitoring networks; (iii) Study on the optimization of national monitoring networks; (iv) Development of a transboundary monitoring programme including agreement on harmonized monitoring protocols and monitoring network to be presented to countries to consider for approval and - to the extent possible- early project implementation; (v) Updated database and information management system to support information and data exchange, provided that the beneficiary countries approve and adopt the transboundary monitoring programme; (vi) Incorporation of sex-disaggregated data collection where relevant to support equitable policy responses across user groups; (vii) capacity-building to ensure that institutions are able to analyze and apply monitoring data in gender-responsive groundwater and planning processes.

Output 1.1.3: A Transboundary Diagnostic Analysis (TDA) for the Djefara/Jifarah Aquifer System completed and agreed upon

The TDA will provide a shared diagnostic basis for governance, management, and investment planning under components 2 and 3. It will assess (the list is indicative; it will be reviewed and finalized during PPG stage): groundwater use, quantitative water balance, seawater intrusion, climate-related risks; governance , including in relation to abstraction control, pollution management, recharge protection, and enforcement with a focus on poverty and gender inequalities; groundwater-dependent ecosystems; pollution pressures; and socioeconomic drivers of identified pressures. Analysis will consider gender-differentiated access to water resources and participation in groundwater-dependent livelihoods to inform inclusive policy design. Consultation events will be organized in the two countries prior to the initiation of the TDA to (i) define the transboundary issues perceived by

stakeholders, along with the corresponding pressures and drivers; and (ii) present the draft TDA to stakeholders for feedback and use this feedback to finalize the TDA for submission to the countries.

As part of the TDA, Environmental Status Indicators will be agreed upon by the two countries to describe the state of the aquifer (baseline), to be applied periodically to monitor long-term trends, and the impacts of remedial measures.

Component 2: National and transboundary aquifer governance and coordination frameworks

Component 2 translates improved knowledge into policy, institutional, and investment responses at national and bilateral levels. It supports immediate no-regret actions while laying the foundations for coordinated transboundary management through a SAP, SAP financing pathways, and institutional cooperation options.

Outcome 2.1: Policy, institutional and management frameworks strengthened at national and transboundary levels to promote coordinated responses to priority groundwater risks in the Djefara/Jifarah Aquifer System.

This outcome ensures that strengthened modelling and diagnostic analysis under Component 1 inform enforceable governance measures, investment decisions, and coordination mechanisms across key water-using sectors.

Output 2.1.1: No-regret national-level policy and management actions identified and agreed upon, with their initial implementation supported by countries and relevant stakeholders. These actions will be informed by gender-responsive and socially inclusive governance approaches and will address urgent groundwater pressures with transboundary implications.

This output will support a phased and risk-informed approach to the identification and implementation of no-regret actions under existing mandates, while taking into account political economy, institutional, and enforcement constraints and contributing to longer-term transboundary objectives. “No-regret” actions are those that deliver benefits for groundwater management and reduce risks -such as over-abstraction, pollution, etc.- while remaining effective under a wide range of future climate, socioeconomic, and policy scenarios. focus will be on identifying feasible, socially acceptable, and institutionally viable entry points for early action. Stakeholder engagement processes will ensure participation of women and men water users and local actors, particularly in contexts where access and decision-making participation differ. Gender considerations will be systematically integrated into the identification and implementation of no-regret actions through the development of a gender–no regret action matrix, which assesses each action in terms of gender-differentiated roles, impacts, access to resources, and opportunities for participation and benefit.

Tentative activities include: (i) rapid identification of urgent groundwater risks and corresponding no-regret actions for early implementation; (ii) targeted political economy and institutional analyses to assess feasibility, incentives, and barriers for measures such as abstraction permitting, pollution control, recharge-area protection, and enforcement[3]; (iii) testing of enabling tools and approaches that can support implementation (e.g., remote sensing-based groundwater abstraction monitoring, compliance-support systems, and monitoring improvements[4]); and (iv) support for piloting or incremental implementation of selected measures where feasibility, stakeholder acceptance, and institutional readiness are demonstrated.

Output 2.1.2: A Strategic Action Programme (SAP) for the Djefara/ Jifarah Aquifer System jointly developed and endorsed by the countries.

Building on the TDA and early national actions, this output will support the development of a jointly agreed SAP defining priority measures and coordination arrangements. The SAP development process will ensure

integration of gender-responsive participation mechanisms, by promoting the meaningful inclusion of both women and men in stakeholder consultations, decision-making processes, and priority-setting at national and transboundary levels. Tentative activities include: (i) Structured national and bilateral consultations, including technical working groups and multi-stakeholder dialogues, to identify, discuss, and prioritize feasible and acceptable measures, coordination arrangements, and response options addressing the drivers and impacts of transboundary issues identified through the TDA, as well as to review and validate the draft SAP prior to its presentation to national authorities for discussion, negotiation, agreement, and endorsement; (ii) Preparation of the SAP using results generated under Component 1 (iii) Consolidation of SAP goals, objectives, priority measures, timelines, roles, responsibilities, coordination arrangements, and measurable targets; (iv) Development of a phased implementation roadmap aligned with national planning processes and financing opportunities; (v) subject to sovereign decision-making, presentation of the SAP for high-level endorsement by countries to ensure political ownership.

Output 2.1.3: Options for a bilateral institutional arrangement for coordinated management of the Djeffara /Jifarah Aquifer System developed and presented to the two countries for consideration and inclusion in the SAP

Recognizing that any institutional arrangement must be defined and agreed by Libya and Tunisia, this output will provide an analytical and facilitative basis for informed decision-making on future cooperation modalities. The output will focus on identifying and raising awareness among countries and responsible stakeholders on the benefits of cooperation and the mechanisms to share these. The output will also focus on clarifying feasible options that support coordinated aquifer management while remaining compatible with broader regional cooperation frameworks. Any proposed arrangement will consider inclusive representation, transparency, and gender-responsive participation mechanisms. Tentative activities include: (i) Structured national and bilateral consultations; (ii) Definition of the benefits of cooperation in the context of the Djeffara/Jifarah aquifer and actions to increase awareness on these among stakeholders and governmental authorities; (iii) Transboundary governance analysis and feasibility study assessing existing Libya-Tunisia coordination mechanisms; (iv) Identification of cooperation scenarios ranging from enhanced data exchange and joint technical committees to more formal bilateral arrangements; (v) Preparation of draft institutional arrangement texts for consideration and (vi) Inclusion of actions in the SAP related to a dialogue between the two countries to discuss and agree on the preferred arrangements; (vii) Subject to sovereign decision-making, facilitation of the dialogue and negotiation process, and support for initial operationalization steps.

Outcome 2.2: Financing frameworks and investment pathways for sustainable management of the Djeffara/Jifarah Aquifer System strengthened

This outcome will strengthen enabling conditions for financing and implementation of SAP priority actions supporting sustainable management of the Djeffara/Jifarah Aquifer System. Building on the TDA/SAP process and informed by pilot demonstration results, the outcome will support prioritization of investment pathways related to (the following list is indicative and will be finalized using the TDA/SAP process results) groundwater stress reduction, salinization management, conjunctive water use, and sustainable agricultural water management. Particular attention will be given to linking priority SAP actions with suitable financing and implementation pathways aligned with national planning processes, development partner investments, and potential climate and private sector financing opportunities.

Output 2.2.1: Financing framework built to support implementation of the Strategic Action Program

Recognizing that available financing is limited to implement the SAP, this output explores financing sources, instruments, and investment pathways to help close the finance gap and support implementation of priority SAP actions. All activities will consider equitable access to financing across user groups, including gender-differentiated constraints. Tentative activities include: (i) Structured national and bilateral consultations; (ii) identifying priority SAP actions and related investment needs; (iii) identifying and matching suitable financing sources and instruments (e.g. national budgets, IFIs, bilateral programmes, climate finance, efficiency gains, private sector, etc.) to the priority SAP actions and related investment needs; and (iv) identifying pre-conditions and assessing bottlenecks to accessing these financing sources, and proposing actions to address these bottlenecks.

Component 3: Pilot demonstrations for water and food security under climate variability

Component 3 responds to persistent groundwater over-abstraction, declining water quality, and climate variability by testing practical, locally appropriate solutions that can improve water and food security without locking countries into premature large-scale investments. Demonstrations will learn from, and inform policy, planning, and investment decisions under Component 2, rather than to substitute for national implementation programmes. Priority areas and solutions will be identified during the PPG phase using jointly agreed hydrogeological, socioeconomic, institutional, and governance criteria. Indicative selection criteria may include groundwater stress and salinization risks, relevance to priority transboundary issues, stakeholder interest and participation potential, feasibility of implementation, accessibility and security considerations, institutional readiness, scaling potential, and opportunities to generate transferable lessons under different climatic and agricultural conditions.

Outcome 3.1: Demonstrations of agricultural and water solutions in priority areas inform pathways for scaling sustainable management of the shared Djefara/Jifarah Aquifer System.

This outcome generates applied evidence on the technical, institutional, and financial feasibility of agricultural and water solutions under groundwater stress and climate change. An indicative list (it will be reviewed during PPG phase) of solutions that the project will consider includes: smart and climate-resilient agricultural approaches (e.g., precision farming and crop selection), improved irrigation water management approaches, groundwater demand management, abstraction control, aquifer recharge, and modern and cost-efficient technologies for groundwater level monitoring, salinization risk management, pollution reduction, and the integration of non-conventional water resources (e.g., desalinated and treated wastewater) within broader conjunctive use systems, including water supplied through national transfer infrastructure such as the Great Man-Made River and basin dams.

Output 3.1.1: Gender-responsive and women empowering and/or novel practices to address management issues demonstrated in priority areas of the Djefara/Jifarah Aquifer System, including sustainable agricultural practices (e.g., crop diversification and smart/precision agriculture) and water practices (e.g., non-conventional water use, aquifer recharge, groundwater level monitoring, and improved irrigation water management approaches).

This output will design, implement, and assess pilot demonstrations relevant to groundwater sustainability and climate resilience. The identification, design, implementation, and evaluation of demonstrations will be based on highly participatory approaches, ensuring engagement of women and men farmers, water users, local communities, and other relevant stakeholders to support inclusive participation and identification of gender-differentiated constraints. Demonstration activities will promote women's participation and empowerment through targeted capacity-building, inclusive engagement in local water and agricultural management activities, and consideration of gender-differentiated needs related to water access, agricultural livelihoods, and climate resilience. Where feasible and appropriate, the project will explore opportunities for selected demonstration activities to be women-led or specifically designed to strengthen women's participation and leadership in climate-resilient groundwater and agricultural water management

practices. Results will inform feasibility assessments and investment prioritization under Output 3.1.2. Tentative activities include: (i) based on inclusive stakeholder consultation processes and guidance by national authorities, identification and prioritization of demonstration areas and indicative demonstration solutions using hydrogeological, socioeconomic, governance, replication, security, accessibility, and implementation feasibility criteria, including criteria that prioritize women-led agricultural businesses or farms, be further refined during the PPG phase; (ii) detailed selection, tailoring, and design of practices suited to local agricultural, hydrogeological, and water management conditions; (iii) targeted capacity-building and empowerment activities supporting women's participation in groundwater and agricultural water management decision-making and climate-resilient livelihood practices; (iv) establishment of a limited number of pilot monitoring sites (including one in Libya and one in Tunisia) to generate proof-of-concept evidence and improve scalable monitoring approaches; (v) preparation of site-specific implementation plans; (vi) implementation of demonstration activities and associated technical support measures contributing to improved groundwater and agricultural water management approaches in priority areas; and (vii) structured monitoring and evaluation of performance on groundwater use and pollution stress reduction potential; (viii) Scaling assessments and associated technical guidance developed (ix) documentation of benefits and lessons learned and sharing of these through communication channels and events to build local awareness, acceptance, and buy-in.

Monitoring indicators will also include indicators related to integration of traditional and local governance, traditional and local knowledge and capacity building for Indigenous Peoples and local communities, as appropriate.

Output 3.1.2: Project and investment fiches developed for the implementation of priority climate resilient water and food security infrastructure investments

This output will translate priority investments identified during the SAP elaboration process and/or under output 3.1.1 into project and investment fiches. The resulting proposals will inform the SAP financing framework, supporting future uptake by governments, development partners, and climate finance mechanisms. Tentative activities include: (i) Technical feasibility and cost-benefit assessments of selected agricultural and water solutions; (ii) Definition of institutional, regulatory, and operational requirements for scaling; (iii) Climate-risk screening and resilience design considerations; (iv) Identification of financing pathways and delivery mechanisms; (v) Identification of, in cooperation with the governments of the two beneficiary countries, and through targeted engagement with donors and financing partners, opportunities for mobilizing support for implementation of priority projects. The fiches will be annexed to the SAP.

Component 4: Knowledge management, learning, and communication

Component 4 ensures that technical, governance, and demonstration results generated under Components 1–3 are translated into sustained capacity, institutional ownership, and scalable impact. It supports knowledge management, communication, and adaptive learning processes needed to strengthen institutional ownership, support effective implementation, and promote long-term sustainability of project results.

Outcome 4.1: Capacity-development, knowledge management and learning, communication and outreach effectively support achievement of project objectives.

This outcome ensures that results from Components 1–3 are applied and sustained through knowledge management, targeted capacity development, structured learning, and communication at national, bilateral, and regional levels.

Output 4.1.1: Gender responsive targeted capacity development and learning programmes implemented for sub-national and national stakeholders to support application of project tools and approaches

This output strengthens institutional and technical capacity to apply project tools and actions. Capacity development will be aligned with national planning and management processes and support uptake of project results. Tentative activities include: (i) Identification of institutional and gender-differentiated capacity needs, including barriers to women’s participation, access to resources, and environmental management decision-making; (ii) Design and delivery of targeted training programmes (e.g., modelling, monitoring, governance reform, climate-resilient agriculture and water practices, investment planning) that are accessible, inclusive, and responsive to the needs of diverse groups of women and men; (iii) Implementation of learning approaches such as training-of-trainers, farmer field schools, and practitioner workshops aligned with national planning and management processes.

Output 4.1.2: South–South experience sharing, peer learning, and best-practice exchange facilitated with relevant regional and global initiatives to inform integrated and gender responsive groundwater governance and management

This output strengthens cross-regional exchange and applied learning. Tentative activities include: (i) Identification of relevant regional and global integrated water resources management as well as groundwater-specific and GEF IW initiatives including those promoting gender equality and inclusive water governance; (ii) Organization of exchange visits, peer-learning events, and virtual dialogues, including IW twinning arrangements ensuring balanced participation, representation, and leadership of women and men, and addressing barriers to engagement; (iii) Documentation and dissemination of lessons to inform national and transboundary governance, including case studies highlighting women’s and men’s roles in groundwater management, and evidence on barriers, enabling factors, and impacts on access, decision-making, and benefits.

Output 4.1.3: Project visibility and knowledge sharing enhanced through a project website and knowledge products, with lessons learned disseminated via IW:LEARN, including participation in IW Conferences and production of Project Experience Notes

This output ensures systematic communication, regional and global knowledge sharing, and contribution to the GEF IW knowledge base. Tentative activities include: (i) development and maintenance of a project website and communication tools; (ii) preparation and dissemination of knowledge products (policy briefs, guidance notes, technical summaries), including dedicated documentation of lessons learned and best practices related to women’s empowerment, inclusive participation, and climate-resilient groundwater and agricultural water management; and (iii) engagement with IW:LEARN, including participation in IW Conferences and preparation of Project Experience Notes. At least 1% of the project grant will support IW:LEARN activities.

Output 4.1.4: A strategic and gender responsive communication and outreach plan, developed and implemented.

This output supports inclusive participation and strengthened stakeholder outreach across the project, with a focus on addressing gender-differentiated barriers related to access to information, participation, and

environmental decision-making. Stakeholder and gender analyses undertaken during the PPG phase will inform communication, outreach, and engagement approaches, including mapping women's and men's roles in groundwater use, agriculture, and value chains, and identifying barriers to participation and access to information. Tentative activities include: (i) development and implementation of the strategic communication and outreach plan and associated activities, including dissemination of information on climate-resilient water and agricultural management practices, technologies, and financing opportunities using accessible formats, local languages, and visual communication tools where appropriate; and (ii) targeted outreach and engagement activities promoting women's participation and addressing gender-differentiated impacts related to groundwater and agricultural water management.

M&E Outcome 5.1: Effective project implementation, monitoring and reporting based on adaptive management and lessons learned

This outcome establishes a structured, gender-responsive monitoring, evaluation, and learning system to ensure accountability and continuous improvement.

Output 5.1.1: A gender-responsive project monitoring, evaluation and adaptive management system established and operational, including annual PIRs completed

This output will ensure systematic monitoring, adaptive management, accountability, and reporting throughout project implementation. Tentative activities include: (i) development and operationalization of a gender-responsive project monitoring and evaluation system, including indicators, baselines, and data collection protocols, including the establishment of gender baselines specific to pilot activities through collection of sex-disaggregated data on access to water resources, land, technologies, water governance and financing; (ii) gender-responsive stakeholder feedback and grievance mechanisms; and (iii) annual national and binational project review and adaptive management processes, including periodic review of implementation risks and changing operating conditions where relevant; and (iv) preparation of Project Implementation Reports (PIRs), progress reports, and monitoring updates.

Output 5.1.2: Mid-Term Review and Terminal Evaluation conducted

This output will ensure implementation of independent mid-term and terminal evaluations consistent with GEF and FAO requirements

Indicative Implementation arrangements

The proposed project will be implemented in accordance with FAO and GEF policies and procedures. FAO will serve as the GEF Implementing Agency (IA), responsible for overall project oversight, quality assurance, fiduciary compliance, and supervision. The Global Water Partnership-Mediterranean (GWP-Med) will be the Executing Agency (EA), responsible for day-to-day project execution, coordination, reporting, and delivery of project outcomes and outputs, in close collaboration with national institutions in Libya and Tunisia. National institutions – to be identified during the PPG phase - will be engaged in the execution of the project through the responsible partner modality.

National implementation will be undertaken in coordination with relevant ministries, groundwater and water resource authorities, research institutions, and local stakeholders in both countries. Extensive consultations and technical exchanges with national institutions have already informed project design and identification of priority actions. Building on these engagements, national government institutions and technical partners are expected to play a central role in implementation of activities related to groundwater assessment, modelling, monitoring, governance, stakeholder engagement, and pilot demonstrations, thereby strengthening national ownership, institutional capacity, and long-term sustainability of project outcomes.

A Project Steering Committee (PSC) will be established to provide strategic guidance and support coordination across sectors and between countries. The PSC is expected to include representatives from relevant national institutions in Libya and Tunisia, FAO, GWP-Med, and other relevant partners, as appropriate.

Building on its long-standing experience in transboundary water cooperation, GWP-Med brings a combination of technical, institutional, and facilitation expertise that strengthens the project's capacity to deliver integrated results across the shared Djeffara/Jifarah Aquifer System. Crucially, as a core executing partner in the GEF Mediterranean Sea Programme (MedProgramme), GWP-Med has demonstrated its capacity to manage large-scale water and coastal governance initiatives at the sub-national, national and regional levels, deploy complex WEFE (Water-Energy-Food-Ecosystems) nexus frameworks, and tackle pollution and climate risks. GWP-Med will ensure that MedProgramme results applicable to the Djeffara/Jifarah Aquifer System will be used for the implementation of this project. Further, GWP-Med will use and replicate successful approaches and experiences gained through its direct engagement in the MedProgramme such as methodologies for the integrated management of coastal basins and its surface and underground resources, implementation of demonstration activities related to food systems, identification and increasing the maturity of investments etc. Through this and other portfolios, GWP-Med not only has gained the necessary technical knowledge and experience but has also cultivated trust-based relationships with national and local institutions, providing a critical foundation for facilitating the Transboundary Diagnostic Analysis (TDA), the Strategic Action Programme (SAP), and the harmonized monitoring and modelling instruments that the project will develop. GWP-Med's technical knowledge and the established networks and facilitation expertise enable it to effectively coordinate with national water authorities - such as MARHP in Tunisia and the Ministry of Water Resources in Libya - and actively engage local stakeholders. Its proven experience in facilitating multi-sectoral policy dialogue, mobilizing scientific institutions, and leading gender-responsive stakeholder engagement ensures coherent implementation across technical, institutional, and community-driven activities.

Incremental / Additional Cost Reasoning and Baseline Contributions

The incremental reasoning underpinning the proposed Djeffara/Jifarah Aquifer System project is simple. The current baseline primarily consists of:

- National water supply, irrigation, desalination, and wastewater investments implemented independently by Tunisia and Libya;
- Sector-driven groundwater abstraction and agricultural development programmes;
- Fragmented monitoring, modelling, and regulatory enforcement efforts at national levels; and
- Regional NWSAS cooperation frameworks that do not cover the coastal and salinity-sensitive dynamics of the Djeffara/Jifarah Aquifer System.

While these baseline initiatives address important aspects of water security, they remain nationally bounded and sectoral in focus. They do not systematically address cumulative transboundary impacts such as overdraft, seawater intrusion, pollution, and climate-related recharge decline, nor do they provide an agreed, science-based framework for coordinated Tunisia–Libya aquifer management.

The GEF incremental value lies in strengthening transboundary cooperation and creating enabling conditions for sustainable management of the shared Djeffara/Jifarah aquifer. Through harmonized modelling, monitoring, and joint analysis, the project will build a common evidence base to inform policy reform, no-

regret national actions, and a SAP. It will further support a SAP financing framework defining investment and scaling pathways aligned with shared priorities.

By advancing coordinated governance instruments, no-regret national action, demonstration activities, and transboundary investment and financing frameworks, the project generates Global Environmental Benefits that exceed those achievable through isolated national interventions. The project will further strengthen enabling conditions for scaling integrated climate-resilient groundwater and agricultural water management approaches in priority areas of the Djefara/Jifarah Aquifer System, thereby contributing to enhanced groundwater security, ecosystem protection, climate resilience, and sustainable water and food security outcomes across the shared aquifer system.

Global Environmental Benefits

The project will generate Global Environmental Benefits by promoting coordinated, science-based and climate-resilient management of the transboundary Djefara/Jifarah Aquifer System. By reducing groundwater over-abstraction, mitigating salinization and seawater intrusion, and strengthening pollution control and recharge management, the project will help safeguard shared freshwater resources and associated coastal ecosystems.

Through jointly agreed governance instruments, no-regret national action, pilot demonstrations, and a SAP supported by a financing framework for its implementation, the project will advance coordinated, equitable, and sustainable use of groundwater resources across sectors. Pilot demonstrations, technical assistance, and associated investment and financing pathways will support improved groundwater and agricultural water management approaches in priority areas, contributing to broader groundwater management frameworks and implementation measures addressing groundwater stress and salinization risks. The project will also promote inclusive participation and gender-responsive approaches in water governance and decision-making.

Ultimately, expected Global Environmental Benefits include:

- Enhanced water security for communities, agriculture, and economic sectors dependent on the shared Djefara/Jifarah Aquifer System;
- Improved resilience of groundwater-dependent and coastal ecosystems affected by salinization and land–sea interactions;
- Improved management practices in priority landscapes affected by groundwater stress, contributing to more sustainable groundwater and agricultural water use; and
- More sustainable and climate-resilient water and food production systems in a shared, transboundary context.

How stakeholders will be engaged in the project preparation, and their respective roles and means of engagement

Successful implementation and long-term sustainability of the project will depend on the active and inclusive engagement of national authorities, local institutions, water users, civil society organizations (CSOs), women's organizations, research institutions, private sector actors, and local communities across Tunisia and Libya.

During the PPG phase, the project will undertake a gender-responsive and socially inclusive stakeholder consultation process to refine project design, validate priorities, identify pilot areas, and support development of the TDA, SAP, and associated governance and investment frameworks. This will include meetings with the national authorities and stakeholders to receive guidance and comments on Project Document Drafts, consultation online and/or face-to-face event(s) with local stakeholders, and a validation workshop.

A stakeholder analysis and engagement plan will be developed along with a gender analysis and action plan. This work will help identify relevant stakeholder groups, clarify their respective roles and interests, and support appropriate engagement throughout project activities. These preparatory activities will help ensure that stakeholder priorities, gender considerations, local knowledge, and implementation feasibility are appropriately reflected in the final project design, including selection of pilot areas, engagement modalities, and implementation arrangements.

During project implementation, gender-responsive and inclusive stakeholder engagement approaches will be applied across all project components. Engagement modalities are expected to include national and local consultations, technical working groups, bilateral coordination meetings, participatory planning processes, pilot demonstrations, capacity-development activities, South–South exchanges, and targeted community-level dialogues involving women, youth, farmers, water users, and vulnerable groups. These approaches are intended to strengthen national ownership, inclusive governance, and the long-term sustainability of project results. Stakeholder engagement processes will also seek to align with ongoing national, regional, and Mediterranean initiatives to support coherence, coordination, and knowledge sharing.

Stakeholder engagement and gender mainstreaming will be integrated across project activities rather than treated as stand-alone elements. Under Component 1, national institutions, technical agencies, and research organizations will contribute to monitoring, modelling, and TDA development. Under Component 2, national authorities, local stakeholders, and sectoral actors will participate in policy dialogue, SAP development, and investment planning processes. Under Component 3, pilot demonstrations will actively engage farmers, water users, women practitioners, existing CSOs, and local communities in the testing and scaling of climate-resilient groundwater and agricultural water management approaches. Component 4 will support cross-cutting coordination, knowledge sharing, communication, and adaptive learning across the project as a whole, while gender mainstreaming and inclusive stakeholder engagement approaches are applied across all project components.

Table 2: Stakeholder mapping table

Institution / organization	Role and contribution to project development and implementation	Benefits & co-benefits
Tunisia –Ministry of Agriculture, Hydraulic Resources and Fisheries (MARHP) (including Directorate General of Water Resources (DGRE) and Regional Commissariats for Agricultural Development (CRDA)	Lead national authority for groundwater management; technical oversight of modelling, monitoring, abstraction control and policy reform (Components 1 & 2); agriculture and water management planning (Component 3) extension services (Component 4), coordination of	Strengthened regulatory enforcement, improved abstraction control, better data for planning; enhanced institutional capacity and climate-resilient water governance, supporting water and agriculture solutions scaling-up.

	no-regret action and SAP negotiations (component 2).	
Tunisia – Ministry of Environment	Policy coordination on pollution control, environmental quality, recharge-area protection, ecosystem safeguards; alignment with LBS/ICZM commitments, climate action coordination (Components 1 & 2).	Improved groundwater quality management; integration of biodiversity and pollution objectives into water governance, support for NDC implementation.
Libya – Ministry of Water Resources	Lead authority for groundwater governance; coordination of modelling, monitoring harmonization, policy reform, and bilateral dialogue; engagement in SAP and institutional options.	Strengthened monitoring, abstraction management and enforcement capacity; support for implementation of National Water Security Strategy 2025–2050.
Libya – General Water Authority / Technical Agencies	Technical data provision, hydrogeological assessments, participation in monitoring harmonization and modelling activities (component 1 and 3).	Enhanced technical capacity; improved national groundwater databases and decision-support tools.
Libya – Ministry of Agriculture and Livestock	Agriculture and irrigation planning, policy reforms, extension services, and participation in identification and scaling of climate-resilient agricultural water management approaches (Components 2 & 3)	Enhanced knowledge about water and agriculture solutions, supporting scaling-up of solutions and knowledge sharing
Libya – Ministry of Environment	Policy coordination on pollution control, environmental quality, ecosystem safeguards; alignment with LBS/ICZM commitments, climate action coordination, oversight of NDC implementation	Improved groundwater quality management; integration of biodiversity and pollution objectives into water governance, support for NDC implementation.
Governorates (Gabès, Medenine, Tataouine in Tunisia; relevant Libyan municipalities)	Contribution to integrated modelling, Participation in pilot site selection, implementation of demonstration activities (Component 3), enforcement of abstraction and pollution controls.	Enhanced capacity and decision making-tools mastering, Improved local water security; adoption of scalable water-saving and climate-resilient agricultural practices.
Water and Sanitation Utilities (Libya & Tunisia), including National Water Exploitation and Distribution Company (SONEDE) (Tunisia). National Office for Sanitation (ONAS) (Tunisia) and the General Water and Sanitation Company (Libya)	Contribution to SAP development, groundwater and wastewater management coordination, and the SAP Investment and Financing Framework (Components 2 & 3).	Support for the implementation of national sub-sectoral strategies for drinking water and sanitation

Farmers' Associations and Water User Associations, including Agricultural Development Groups (GDA)	Co-design and implementation of pilot demonstrations; participation in monitoring and abstraction management discussions; adoption of sustainable agricultural and water practices.	Improved irrigation efficiency, reduced salinity risks, improved productivity and resilience; strengthened voice in governance processes.
Agribusiness & Technology Providers	Co-design of pilot demonstrations; participation in monitoring and abstraction management discussions; key actors in the region's shift toward the Water-Energy-Food nexus by providing solutions specific to sustainable agricultural and water practices (component 3).	Improved public-private dialogue and uptake of local solutions across e.g. groundwater quality and quantity management, irrigation efficiency, productivity and resilience measures.
Tourism Sector Representatives (Tunisia)	Participation in governance gap analysis, abstraction permitting discussions, wastewater discharge compliance, and water-use efficiency measures (Components 2 & 3).	Improved long-term water reliability; reduced reputational and regulatory risks.
Research Institutions and Universities (Tunisia & Libya), including National Agronomic Institute of Tunisia (INAT); National School of Engineering (ENIS/ENIG); Arid Regions Institute (IRA); Higher Institute of Water Sciences and Techniques (ISSTE)	Support geological, hydrogeological, hydro-chemical modelling; vulnerability mapping; scenario analysis; capacity development (Component 1). Identification of potential water and agriculture solutions, building on research results	Strengthened scientific capacity; enhanced regional research collaboration; long-term institutional knowledge retention.
Sahara and Sahel Observatory (OSS)	Technical advisory role; facilitation of regional knowledge exchange; potential support in climate finance mobilization; ensure compatibility with broader regional groundwater frameworks.	Strengthened regional relevance; replication potential in other African aquifers.
Global Water Partnership (GWP)	Executing agency; facilitation of policy dialogue, coordination, stakeholder engagement and knowledge management.	Strengthened regional leadership on groundwater governance; enhanced WEFE implementation frameworks.
UNESCO / MedSea Programme	Knowledge exchange, regional groundwater science collaboration, technical coordination, and support for Mediterranean cooperation and knowledge-sharing processes relevant to coastal aquifer management (Components 1, 2 & 4).	Improved science-policy interface; regional replication potential.
Civil Society Organizations (CSOs), including ACDD	Awareness-raising, community mobilization, support for stakeholder	Increased local ownership; strengthened transparency

Gabès, ASOC Chenini, ADD Médenine, APEDD, Tataouine, REWAD Dev. Organization, LECAO Organization	engagement and gender-responsive activities, participation in local consultations, sustainable oasis management, climate resilience, and natural resource governance activities. Relevant CSOs may also support participatory pilot implementation (component 3) and local knowledge integration.	and accountability; improved social inclusion and stakeholder participation in groundwater governance processes.
Women's Associations & Rural Women's Groups (Tunisia + Libya)	Participation in gender analysis; involvement in pilot design (component 3); engagement in decision-making forums; feedback on irrigation and labor dynamics.	Enhanced participation in groundwater governance; targeted support to overcome structural barriers; improved livelihood resilience.
International Financial Institutions (World Bank, AfDB, EIB, etc.)	Alignment of investment pipelines with SAP priorities and SAP investment and financing framework (component 2); co-financing opportunities; scaling of investment-ready proposals (component 3).	De-risked investment environment; improved project bankability; long-term sustainability of groundwater investments.
Climate Finance Institutions (e.g., GCF)	Potential financing of SAP investment framework priorities and support for climate-resilient groundwater and agricultural water management investments (Components 2 & 3).	Contributions to pipeline of investment-ready projects, climate-screened groundwater projects.
Tunisia Ministry of Women, Family, Childhood and Seniors (MFFCES)	Provide guidance on gender indicators and M&E systems (component 4). Contribute to capacity-building activities for project partners on gender mainstreaming (component 4). Facilitate participation of women in consultations, governance processes, and monitoring systems	Bridges gaps between technical sectors (water/agriculture) and social/gender policy systems
Libya Ministry of Social Affairs / gender-related functions	Provide policy guidance to ensure all groundwater, agriculture, and investment interventions align with national gender equality frameworks. Provide guidance on gender-responsive design of SAP actions, investments, and financing mechanisms (component 2). Facilitate coordination between technical ministries (water, agriculture) and gender stakeholders.	Enhances effectiveness, sustainability, and equitable access to water, agriculture, and financing opportunities.

	Support identification and engagement of, women’s organizations, rural women’s networks, women-led enterprises.	
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Knowledge Management

The project’s knowledge management approach is designed to ensure that technical analysis translates into governance actions, early national implementation, and scalable investment pathways. Under Component 1, integrated modelling, monitoring, and TDA processes will feed into a harmonized groundwater monitoring and information management system, providing a shared platform for data exchange and science-based decision-making.

Component 4 will strengthen institutional capacity to apply project tools through targeted training and South–South exchanges, leveraging the Sahara and Sahel Observatory (OSS) as a regional knowledge hub and collaborating with other GEF International Waters projects and initiatives, including the AMCOW groundwater desk and the GEF Pan-African Water for Resilience project (FAO/IWMI). Engagement with IW:LEARN—through participation in IW Conferences and production of Experience Notes—will support structured global knowledge exchange.

Demonstration activities under Component 3 will generate applied lessons on agricultural and water practices, which will be documented and translated into guidance documents, aligning with and informing national groundwater management processes, SAP development, and bilateral coordination arrangements under Component 2. These feedback loops will help align investment planning with SAP priorities and national governance measures.

Knowledge management activities will be supported through gender-responsive stakeholder engagement, communication and outreach activities, and adaptive monitoring and learning processes implemented across Components 4 and M&E Outcome 5.1. Lessons learned and knowledge products, including those related to inclusive participation, women’s empowerment, traditional and local knowledge, locally informed governance approaches, and climate-resilient groundwater and agricultural water management practices, will be captured through project monitoring, technical exchanges, pilot demonstrations, and analytical activities, and disseminated through the project website, IW:LEARN engagement, and regional and global knowledge-sharing platforms.

Innovation, gender, sustainability and potential for scaling up

Innovation: The project advances an integrated transboundary groundwater management approach that combines harmonized modelling, monitoring, governance interventions, and planning and institutional arrangements. The development of SAP financing pathways via a SAP Investment and Financing framework, and the integration of groundwater governance with coastal risk management and salinization control, is particularly innovative in the Mediterranean context.

Gender: Exemplified via the case of Tunisia, women play a central role in agriculture, which consumes of most national water resources, yet face structural barriers to participation in water governance and decision-making. Heavy agricultural workloads, limited mobility, socio-cultural norms, and gaps between gender equality policies and practice constrain their influence in resource management. The project will address these gaps through gender-responsive stakeholder engagement, targeted capacity building, inclusion of women in local water governance processes, and integration of gender considerations into monitoring, policy reform, and demonstration activities. Dedicated gender-sensitive indicators and learning processes will help ensure that reforms and investments equitably benefit women and men, while avoiding unintended impacts related to land and inheritance dynamics. During the PPG phase, dedicated gender baseline assessments will be undertaken in Tunisia and Libya to inform the development of a Gender Action Plan to inform actions across all project components.

Sustainability: Sustainability will be achieved through strengthened national policy and regulatory interventions, high-level endorsement of the SAP, and development of a SAP investment and financing framework. By embedding governance interventions within national strategies and budgeting processes, and aligning with evolving bilateral cooperation arrangements, the project ensures that results extend beyond its lifetime.

Potential for Scaling Up: Pilot demonstrations will inform project and investment priorities, enabling replication through national programmes, climate finance, and development partner support. The SAP investment and financing framework will provide structured pathways to mobilize innovative funding, including blended finance and climate funds, for implementation. Lessons learned will inform broader Mediterranean and transboundary groundwater initiatives, supporting replication in other coastal and shared aquifer systems facing similar over-abstraction and salinization pressures.

[3] The list of actions is indicative and may alter depending on results of step (i) and stakeholders consultations

[4] The list is indicative and may alter depending on results of step (i) and stakeholders consultations

Coordination and Cooperation with Ongoing Initiatives and Project.

Does the GEF Agency expect to play an execution role on this project?

If so, please describe that role here. Also, please add a short explanation to describe cooperation with ongoing initiatives and projects, including potential for co-location and/or sharing of expertise/staffing

The project will be implemented in close coordination with ongoing national, regional, and Mediterranean initiatives, including relevant regional and technical partners such as OSS. Coordination will build on existing cooperation frameworks and technical knowledge related to the NWSAS, while helping ensure compatibility of modelling approaches, monitoring systems, and data standards across relevant transboundary groundwater initiatives. Although the current MedProgramme implementation period is approaching completion, coordination and technical exchange will continue through collaboration with former MedProgramme Implementing Agencies and partners, UNEP/MAP Regional Activity Centres (including PAP/RAC where relevant), UNESCO-IHP, WWF, and related Mediterranean initiatives and Barcelona Convention processes that continue beyond the MedProgramme timeframe. Cooperation may include joint technical exchanges, participation in regional workshops and knowledge-sharing processes, alignment of modelling and monitoring approaches, and exchange of lessons related to coastal aquifer management, seawater intrusion, climate resilience, and ICZM/LBS priorities. At the national level, collaboration will also be pursued with ongoing

water sector reform and groundwater governance initiatives, including those supported by IFIs, GIZ (ARESET), and the Belgian GEEST programme, particularly in areas related to policy development, monitoring enhancement, and investment planning.

Further, the project will seek coordination and knowledge exchange with relevant gender-responsive water governance and women's empowerment initiatives in Tunisia and Libya, including WACDEP-G Tunisia, the EFOR Project, the Joint Programme on Rural Women's Economic Empowerment (FAO/IFAD/UN Women/WFP), Her4Water/Cities Alliance activities, and relevant UN Women and UNDP programming in Libya. Potential areas of collaboration include inclusive water governance, women's participation in climate-resilient agricultural and water management, capacity building, local governance approaches, and women's economic empowerment linked to sustainable natural resource management. Where feasible, co-location of technical workshops, joint capacity-building events, and shared expertise will be pursued to maximize efficiency, reinforce national ownership, and strengthen the enabling environment for sustainable, climate-resilient groundwater management.

Where feasible, co-location of technical workshops, joint capacity-building events, and shared expertise will be pursued to maximize efficiency, reinforce national ownership, and strengthen the enabling environment for sustainable, climate-resilient groundwater management.

Core Indicators

Indicator 4 Area of landscapes under improved practices (hectares; excluding protected areas)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
50000	0	0	0

Indicator 4.1 Area of landscapes under improved management to benefit biodiversity (hectares, qualitative assessment, non-certified)

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)
50,000.00			

Indicator 4.2 Area of landscapes under third-party certification incorporating biodiversity considerations

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Type/Name of Third Party Certification

Indicator 4.3 Area of landscapes under sustainable land management in production systems

Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.4 Area of High Conservation Value or other forest loss avoided

Disaggregation Type	Ha (Expected at PIF)	Ha (Expected at CEO Endorsement)	Ha (Achieved at MTR)	Ha (Achieved at TE)

Indicator 4.5 Terrestrial OECMs supported

Name of the OECMs	WDPA-ID	Total Ha (Expected at PIF)	Total Ha (Expected at CEO Endorsement)	Total Ha (Achieved at MTR)	Total Ha (Achieved at TE)
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Documents (Document(s) that justifies the HCVF)

Title

Indicator 7 Shared water ecosystems under new or improved cooperative management

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Shared water Ecosystem	Djeffara/Jifarah			
Count	1	0	0	0

Indicator 7.1 Level of Transboundary Diagnostic Analysis and Strategic Action Program (TDA/SAP) formulation and implementation (scale of 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Djeffara/Jifarah	1			

Indicator 7.2 Level of Regional Legal Agreements and Regional management institution(s) (RMI) to support its implementation (scale of 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Djeffara/Jifarah	1			

Indicator 7.3 Level of National/Local reforms and active participation of Inter-Ministeral Committees (IMC; scale 1 to 4; See Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Djeffara/Jifarah	1			

Indicator 7.4 Level of engagement in IWLEARN through participation and delivery of key products(scale 1 to 4; see Guidance)

Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Djeffara/Jifarah	1			

Indicator 11 People benefiting from GEF-financed investments

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female	16,500			

Male	15,500			
Total	32,000	0	0	0

Explain the methodological approach and underlying logic to justify target levels for Core and Sub-Indicators (max. 250 words, approximately 1/2 page)

CI 4: Area of landscapes under improved practices (hectare)

The project is expected to deliver 50,000 ha under improved practices through pilot areas where improved groundwater and agricultural water management approaches inform and support broader groundwater management frameworks and associated implementation measures. Practices may include improved irrigation water management approaches, groundwater demand management, conjunctive water use, aquifer recharge, salinization risk management, non-conventional water use, groundwater monitoring systems, and climate-resilient agricultural water management approaches contributing to reduced groundwater stress and associated ecosystem benefits. Pilot demonstrations, technical guidance, and investment and financing pathways developed under the project are expected to support broader uptake and replication of improved practices beyond the immediate pilot areas.

CI 7 number of shared water ecosystems (fresh or marine) under new or improved cooperative management: Djeffara/Jifarah Aquifer System.

CI 11 People benefiting from GEF-financed investments disaggregated by sex (count): CI-11 is estimated based upon the number of households to be directly involved in design and the piloting of demonstration pilots. The main project target areas will be defined during PPG based on agreed upon priorities. At PIF stage, it is anticipated that in each country, two target areas will be selected. Further, it is anticipated that within each target area five local administrative units will be selected to do piloting with an anticipated 400 households - reached per administrative unit. On average, there are four family members per household. The total number of pilot beneficiaries is therefore estimated at 32,000 people (men/women).

Key Risks

	Rating	Explanation of risk and mitigation measures
CONTEXT		
Climate	Moderate	Increasing temperature, declining recharge, and salinization trends create uncertainty in long-term aquifer projections and may affect demonstration outcomes. Mitigation measures include using climate scenarios, integrating sensitivity analysis in modelling, applying adaptive management, and prioritizing no-regret measures robust under multiple climate futures.
Environmental and Social	Moderate	Pilot activities (e.g., recharge testing, irrigation practices) may pose localized environmental or social risks if not carefully designed. Gender gaps and unequal participation remain structural challenges. Mitigation measures include applying environmental screening before pilot selection; use of precautionary field protocols; implementing a Gender Action Plan with sex-disaggregated indicators; and ensuring inclusive and highly participatory consultations during pilot design and implementation.

Political and Governance	High	Although Libya's civil conflict formally ended in 2020, governance fragmentation and institutional rebuilding challenges persist. The government requires sustained support to effectively manage shared groundwater resources. Bilateral coordination with Tunisia may face delays. Mitigation measures include establishing a high-level Project Steering Committee; promoting continuous technical-level cooperation insulated from political cycles; sequence early no-regret national actions; maintain partnerships with neutral technical bodies and NGOs; support institutional strengthening in both countries in groundwater governance. The project will implement adaptive and flexible work planning, including dynamic monitoring of political and security developments and contingency arrangements allowing activities to be adjusted where needed. Appropriate security protocols, periodic security assessments, and coordination with relevant UN and national security advisory mechanisms will support safe implementation, particularly in Libya.
INNOVATION		
Institutional and Policy	Moderate	Slow or uneven implementation of national policy interventions (e.g., abstraction permitting, pollution control, recharge-area protection) due to capacity gaps and administrative bottlenecks, limited inter-ministerial coordination, or resistance to regulatory tightening in key sectors (e.g. agriculture, tourism, industry). Mitigation measures include early identification and implementation of no-regret national actions with demonstrated government commitment, provision of technical support for regulatory strengthening, embedding actions within existing national policies and planning processes, and using the SAP and climate resilience investment and financing framework to align sectors interlinkages. Finally, regular high-level steering committee engagement will maintain political visibility and ownership.
Technological	Low	Limited technical capacity related to integrated modelling tools, monitoring systems, and data exchange platforms may reduce uptake or long-term sustainability of technical outputs. Mitigation measures include ensuring joint technical validation workshops that will prioritize the use of context appropriate tools; building in-country modelling and data management capacity; and establishing standardized protocols supported by technical backstopping to reduce dependence on external expertise.
Financial and Business Model	Moderate	Insufficient long-term financing or weak incentive structures may limit scaling of demonstration solutions and implementation of SAP priorities, particularly where reforms imply short-term costs for water users. Mitigation measures include the use of the Climate Resilience investment and financing framework to identify new and innovative financing sources including blended finance options, climate finance pathways, and incentive mechanisms aligned with national budget cycles. Project and Investment fiches will explore financing options to implement priority investment and

		potentially scale pilot demonstrations. Fiscal constraints, subsidy pressures, and competing budget priorities may limit national co-financing and governance interventions implementation, especially in Libya. Mitigation measures include the alignment of interventions with cost-saving water efficiency measures; integrating outputs into national budget cycles; and identifying blended and climate finance opportunities through the Climate Resilience investment and financing framework.
EXECUTION		
Capacity	Substantial	Capacity constraints, particularly in Libya, may limit sustained uptake of monitoring systems, enforcement tools, and governance reforms. Limited availability of specialized technical expertise, institutional turnover, and uneven operational capacities may affect implementation continuity and long-term sustainability of project results, particularly for technically complex and transboundary groundwater management functions. Mitigation measures include targeted and sustained capacity development; embedding tools and approaches within national institutions and formal mandates; establishing technical working groups and peer-learning mechanisms; leveraging regional and technical partners, including GWP, OSS, and other relevant institutions, for technical support and South–South exchange; and prioritizing context-appropriate and operationally feasible tools and approaches to reduce long-term dependence on external expertise.
Fiduciary	Low	Project activities are primarily analytical, governance-focused, and pilot-scale; however, fiduciary systems in post-conflict settings may require oversight strengthening. Mitigation measures include applying financial management procedures; using experienced implementing partners; conducting regular audits and procurement reviews.
Stakeholder	Moderate	Stakeholder engagement and social acceptance may be uneven across locations, particularly where groundwater governance reforms, abstraction controls, or institutional fragmentation affect participation and trust. Access and operating constraints may limit continuity of engagement in some areas, particularly in Libya. Mitigation measures include highly participatory consultation approaches; flexible and context-appropriate engagement modalities; communication of aquifer risk evidence; combining regulatory and incentive-based approaches; and strengthening engagement with water user associations, CSOs, and local stakeholders.
Other	Low	External geopolitical developments in the region could affect collaboration dynamics. Mitigation measures include maintaining technical-level continuity; ensuring adaptive work planning; leveraging regional cooperation platforms, when appropriate.
Overall Risk Rating	Moderate	Reflecting governance and institutional challenges—particularly in Libya—as well as climate and transboundary coordination uncertainties. However,

the project's focus on no-regret national governance interventions, phased implementation, strong technical foundations, and adaptive management significantly reduces long-term implementation and sustainability risks while directly contributing to strengthened water security in a shared freshwater ecosystem.

C. ALIGNMENT WITH GEF-8 PROGRAMMING STRATEGIES AND COUNTRY/REGIONAL PRIORITIES

Describe how the proposed interventions are aligned with GEF- 8 programming strategies and country and regional priorities, including how these country strategies and plans relate to the multilateral environmental agreements.

Confirm if any country policies that might contradict with intended outcomes of the project have been identified, and how the project will address this.

For projects aiming to generate biodiversity benefits (regardless of what the source of the resources is - i.e., BD, CC or LD), please identify which of the 23 targets of the Kunming-Montreal Global Biodiversity Framework the project contributes to and explain how. (max. 500 words, approximately 1 page)

GEF International Waters: The project directly supports GEF-8 IW Objective 3: Enhance water security in shared freshwater ecosystems. By combining TDA, national governance reforms, coordinated investment planning, and pilot demonstrations, the project addresses groundwater over-abstraction, salinization and pollution risks through a science-to-policy approach. The project also contributes a distinct transboundary coastal aquifer perspective within the GEF IW portfolio by linking coastal groundwater governance with regional Integrated Coastal Zone Management (ICZM) and Land-Based Sources and Activities (LBS) priorities in a Mediterranean coastal context. Through harmonized monitoring, modelling, salinization assessments, governance coordination, and pilot implementation experience, the project is expected to generate practical lessons, technical knowledge, and transferable approaches relevant to future GEF IW coastal aquifer initiatives and broader transboundary groundwater management efforts across the GEF portfolio.

UN Watercourses Convention: The project will also support practical application of relevant principles of the UN Watercourses Convention in the context of a shared transboundary aquifer, particularly through strengthened cooperation, information exchange, joint monitoring and assessment, coordinated planning processes, and bilateral institutional arrangements for sustainable aquifer management under Output 2.1.3.

Barcelona Convention Framework: The project will complement the Barcelona Convention and its protocols administered under UNEP/MAP, as well as related regional initiatives, by strengthening science-based groundwater governance, coastal aquifer management, pollution reduction, and climate resilience in the Djeffara/Jifarah Aquifer System. In particular, the project supports objectives relevant to the Integrated Coastal Zone Management (ICZM) Protocol and the Land-Based Sources and Activities (LBS) Protocol, while contributing practical transboundary groundwater management approaches in a coastal aquifer context. Through harmonized monitoring, modelling, salinization assessments, and groundwater-related pollution analysis, the project will also help generate data, technical knowledge, and implementation experience relevant to ongoing Barcelona Convention priorities and regional Mediterranean assessment and planning processes.

Regional Groundwater Context: Although hydrologically connected as its northern discharge zone, the Djeffara/Jifarah Aquifer System is not formally managed under existing NWSAS cooperation mechanisms and is generally considered hydrologically distinct from the NWSAS. The project nevertheless remains compatible with evolving regional NWSAS groundwater governance arrangements.

The project also builds on broader Tunisia–Libya bilateral cooperation frameworks initiated under the 2012 agricultural cooperation agreement and subsequent 2013 ministerial-level engagements between the Tunisian Ministry of Agriculture, Hydraulic Resources and Fisheries and Libyan counterparts. While these frameworks were primarily focused on agriculture, livestock, natural resources management, and related technical cooperation rather than dedicated transboundary aquifer governance, they helped establish bilateral dialogue and technical exchange mechanisms relevant to future cooperation on shared groundwater management challenges in the Djeffara/Jifarah context.

Alignment with National Priorities (Tunisia and Libya):

Tunisia: In Tunisia, the project supports implementation of *Water Strategy 2050*, which prioritizes desalination substitution, demand management, managed aquifer recharge, recharge-area protection, digital monitoring, and scarcity pricing. It reinforces groundwater protection measures under MARHP and DGRE mandates, including legally established safeguarding and prohibition zones in the Djeffara/Jifarah. The project contributes to the National Strategy for Ecological Transition 2050 (SNTE) (Strategic Objective 3 on natural capital protection), Tunisia’s NDC 2021 adaptation commitments, the National Biodiversity Action Plan 2030, the National Action Program to Combat Desertification 2030, and the Sustainable Development Strategy for Oases (2015).

Libya: In Libya, the project aligns with Water Law No. 3 of 1982 (water exploitation) and Law No. 15 of 2003 (protection from pollution) and supports implementation of the emerging National Water Security Strategy 2025–2050, currently transitioning from formulation to implementation. It strengthens groundwater monitoring and regulatory enforcement under the Ministry of Water Resources and the General Water Authority, contributes to WEF-based planning priorities, and reinforces Libya’s climate adaptation objectives and institutional rebuilding efforts.

Table 3: Alignment of the proposed project with relevant national policies, strategies, and action plans in Tunisia and Libya

Policy / strategy	Relevance / significance	Project alignment
Tunisia – Water Strategy 2050	Tunisia’s long-term national water strategy focused on addressing severe water scarcity through demand management, desalination, groundwater protection, managed aquifer recharge, digital monitoring, and climate resilience.	The project supports implementation of the strategy through strengthened groundwater monitoring, harmonized modelling, abstraction management, recharge-related approaches, climate-resilient groundwater governance, and pilot demonstrations supporting sustainable agricultural and water management practices.
Tunisia – National Strategy for Ecological Transition 2050 (SNTE)	National framework guiding Tunisia’s ecological transition, including protection of natural capital, climate resilience, and sustainable resource management.	The project contributes to Strategic Objective 3 on natural capital protection through sustainable groundwater management, salinization risk reduction, pollution management, and protection of groundwater-dependent ecosystems.

Policy / strategy	Relevance / significance	Project alignment
Tunisia – Nationally Determined Contribution (NDC) 2021	Tunisia’s climate commitment framework under the Paris Agreement, including adaptation priorities related to water scarcity, drought resilience, and sustainable water management.	The project supports climate adaptation objectives through climate-resilient groundwater governance, conjunctive water management approaches, monitoring systems, and climate-resilient agricultural water management demonstrations.
Tunisia – National Biodiversity Action Plan 2030 / National Action Program to Combat Desertification 2030/ and Sustainable Development Strategy for Oases (2015)	National frameworks addressing biodiversity protection, land degradation, oasis sustainability, ecosystem resilience, and sustainable management of arid and coastal ecosystems.	The project contributes through sustainable groundwater and agricultural water management approaches that help reduce salinization, strengthen recharge conditions, and support resilience of vulnerable coastal and oasis systems.
Libya – Water Law No. 3 of 1982	Libya’s principal legal framework governing water exploitation, groundwater abstraction, and management of national water resources.	The project supports implementation through strengthened groundwater monitoring, harmonized assessment tools, abstraction management, institutional coordination, and development of science-based governance and planning approaches.
Libya – Law No. 15 of 2003 on Environmental Protection	National framework addressing environmental protection and pollution management, including protection of water resources from degradation and contamination.	The project contributes through strengthened groundwater quality monitoring, salinization and pollution risk assessment, and integration of pollution considerations within groundwater governance and planning processes.
Libya – National Water Security Strategy 2025–2050	Emerging long-term strategy intended to guide sustainable water management, climate resilience, institutional reform, and water security planning in Libya.	The project supports implementation through strengthened groundwater governance, transboundary cooperation, climate-resilient planning, monitoring systems, and development of investment and implementation pathways relevant to long-term water security objectives.

SDGs: The project contributes directly to SDG 6 (Clean Water and Sanitation), particularly targets 6.5 (transboundary IWRM) and 6.6 (protection of water-related ecosystems), through strengthened transboundary groundwater cooperation, harmonized monitoring and modelling, and improved groundwater governance and management approaches. The project also supports SDG 13 (Climate Action) through climate-resilient groundwater and agricultural water management approaches, and SDG 15 (Life on Land) through protection of groundwater-dependent ecosystems, reduced salinization risks, and more sustainable management of vulnerable coastal and oasis landscapes.

The project contributes indirectly/directly to the Kunming-Montreal Global Biodiversity Framework primarily through improved groundwater governance, reduced groundwater stress and salinization risks, strengthened climate-resilient agricultural and water management approaches, and enhanced protection of groundwater-dependent and connected coastal ecosystems. By supporting science-based groundwater planning, coordinated management, recharge management, and salinization control, the project is expected to help maintain ecological functions and ecosystem services in coastal wetlands, oasis systems, and groundwater-dependent ecosystems affected by declining groundwater levels and seawater intrusion, including ecosystems connected to the broader Mediterranean coastal zone. The project will also strengthen stakeholder participation, knowledge systems, and financing pathways supporting biodiversity conservation, ecosystem resilience, and more sustainable water and food production systems in the transboundary Djeffara/Jifarah Aquifer System context.

Table 4: Kunming-Montreal Global Biodiversity Framework direct/indirect contributions.

Kunming-Montreal Global Biodiversity Framework Targets	Project contribution towards GBF target
TARGET 1: Plan and Manage all Areas To Reduce Biodiversity Loss	Outputs 1.1.1, 2.1.1 and 2.1.2 will strengthen science-based groundwater planning, coordinated management approaches, and Strategic Action Programme (SAP) implementation pathways to reduce ecosystem degradation associated with groundwater overexploitation and salinization.
TARGET 7: Reduce Pollution to Levels That Are Not Harmful to Biodiversity	The project will strengthen groundwater monitoring, pollution management, salinization risk management, and climate-resilient agricultural and water management approaches to reduce pressures affecting groundwater-dependent and coastal ecosystems.
TARGET 8: Minimize the Impacts of Climate Change on Biodiversity and Build Resilience	Components 1–3 will strengthen climate-resilient groundwater governance, conjunctive water use approaches, climate adaptation planning, and sustainable groundwater management under increasing climate stress and declining recharge conditions.
TARGET 10: Enhance Biodiversity and Sustainability in Agriculture, Aquaculture, Fisheries, and Forestry	Output 3.1.1 will pilot and support scaling pathways for sustainable agricultural water management approaches, including climate-resilient agricultural practices and groundwater demand management measures in priority areas.
TARGET 19: Mobilize Financial Resources for Biodiversity From all Sources	Output 2.2.1 will develop a finance framework supporting financing and implementation pathways for priority SAP actions and sustainable groundwater management investments.
TARGET 20: Strengthen Capacity-Building, Technology Transfer, and Scientific and Technical Cooperation for Biodiversity	Components 1–4 include activities related to groundwater monitoring, modelling, governance strengthening, technical exchange, institutional capacity building, and regional cooperation supporting science-based groundwater management.
TARGET 21: Ensure That Knowledge Is Available and Accessible To Guide Biodiversity Action	The project will strengthen groundwater information systems, harmonized monitoring, modelling tools, stakeholder engagement, and knowledge-sharing processes to support evidence-based decision-making and coordinated aquifer management.
TARGET 22: Ensure Participation in Decision-Making and Access to	Outputs under Components 3 and 4 will support participatory approaches involving local communities, farmers, water users,

Kunming-Montreal Global Biodiversity Framework Targets

Justice and Information Related to Biodiversity for all

TARGET 23: Ensure Gender Equality and a Gender-Responsive Approach for Biodiversity Action

Project contribution towards GBF target

women, CSOs, and other stakeholders in pilot demonstrations, local management planning, and groundwater governance processes.

The project's Gender Action Plan will mainstream gender-responsive approaches across groundwater governance, stakeholder engagement, pilot demonstrations, local management planning, monitoring systems, and knowledge products.

D. POLICY REQUIREMENTS

Gender Equality and Women's Empowerment:

We confirm that gender dimensions relevant to the project have been addressed as per GEF Policy and are clearly articulated in the Project Description (Section B).

Yes

Stakeholder Engagement

We confirm that key stakeholders were consulted during PIF development as required per GEF policy, their relevant roles to project outcomes and plan to develop a Stakeholder Engagement Plan before CEO endorsement has been clearly articulated in the Project Description (Section B).

Yes

Were the following stakeholders consulted during project identification phase:

Indigenous Peoples and Local Communities:

Civil Society Organizations: Yes

Private Sector:

Provide a brief summary and list of names and dates of consultations

The Djefara/Jifarah Aquifer Project has been developed through a structured, multi-stage stakeholder engagement process, including technical scoping and consultations with Tunisian and Libyan line ministries to clarify institutional roles and agency responsibilities. National consultations ensured alignment with hydrogeological priorities and ongoing reform processes, while joint workshops gathering representatives from both Libya and Tunisia confirmed the project structure and consistency with country priorities. Bilateral engagement has been continuous throughout the design phase. Key milestones are highlighted below to illustrate stakeholder coordination and engagement:

June 25, 2025 - Multilateral Inception and Institutional Mapping

Agenda: High-level online meeting with the Tunisian Ministry of Agriculture and Libyan Ministries of Water Resources and Environment to define roles for FAO as the Implementing Agency and GWP as the Executing Agency.

(Meeting participants listed below)

Country participants: Dr. Aissa Hlaimi, General Directorate of Water Resources, Tunisian Ministry of Agriculture, Hydraulic Resources and Fisheries, Tunisia; Mr. Mokhtar Radi, Director, International Cooperation Office, Ministry of Water Resources, Libya; Mr. Rashid Alfutaisi, Advisor, Ministry of Water Resources, Libya; Mr. Omar Sherif, GEF Operational Focal Point, Ministry of Environment, Libya; Implementing Agency (FAO) and Executing Partner (GWP) participants: Mr. Galbiati Lorenzo, GEF International Waters Lead, FAO; Ms. Lucilla Mineeli, GEF International Waters Specialist, FAO; Mr. Dimitris Faloutsos, Deputy Regional Coordinator, GWP-Med; Dr. Sondos Njoumi, Programme Officer, GWP-Med; Dr. Hekma Achour, Programme Officer, GWP-Med

February 5, 2026 – first PIF validation meeting

Agenda: The participants discussed key adjustments to the project design to ensure it meets the specific needs of the Djeffara/Jifarah region.

(Meeting participants listed below – online meeting)

National Focal Points: Mokhtar Radi Salem (Ministry of Water Resources), Libya; Rasheed Elfiteesi (Ministry of Water Resources), Libya; Omar Sherif (Ministry of Environment, GEF OFP), Libya; Aissa Hlaimi (Tunisian Ministry of Agriculture, Hydraulic Resources and Fisheries - DGRE), Tunisia; Abir Bellali (Head of Geophysical Studies Department, DGRE), Tunisia

Implementing Agency (FAO) and Executing Partner (GWP) participants: Lucilla Minelli (IW Specialist, HQ), FAO; Marco Sacchetta (Funding Liaison Specialist, HQ), FAO; Maki Abdourahman (Land & Water Officer, Tunisia), FAO; Afef Ben Abda (Project Manager, Tunisia), FAO; Samia Grimida (Project Coordinator, Libya), FAO; Steffen Hansen (Project Design Expert) (FAO; Dimitris Faloutsos (Regional Deputy), GWP-Med; Hekma Achour (Programme Officer), GWP-Med; Sondos Njoumi (Programme Officer), GWP-Med

March 12, 2026 – second PIF validation meeting

Agenda: Country participants provided guidance on key adjustments to the fully fledged draft PIF document to ensure alignment with the specific needs of the Djeffara/Jifarah region.

(Meeting participants listed below - online meeting)

National Focal Points: Mokhtar Radi Salem, Director of The International Cooperation Office (Ministry of Water Resources) (Libya); Rasheed Elfiteesi, Technical advisor (Ministry of Water Resources) (Libya); Omar Sherif (Ministry of Environment, GEF OFP) (Libya); Aissa Hlaimi – Director General of Water Resources – DGRE (Tunisian Ministry of Agriculture, Hydraulic Resources and Fisheries) (Tunisia); Fawzi Amri – Director General of Groundwater (Tunisian Ministry of Agriculture, Hydraulic Resources and Fisheries) (Tunisia); Abir Bellali - PhD Engineer and Head of the Geophysical Studies Department, DGRE (Tunisian Ministry of Agriculture, Hydraulic Resources and Fisheries) (Tunisia).

Implementing Agency (FAO) and Executing Partner (GWP) participants: Steffen Hansen (Project Design Expert) (FAO); Lucilla Minelli (IW Specialist, FAO-GEF Coordination Unit); Marco Sacchetta (Funding Liaison Specialist, FAO-GEF Coordination Unit); Lorenzo Galbiati (IW Lead, FAO-GEF Coordination Unit); Maki Abdourahman (Land & Water Officer, Tunisia) (FAO); Afef Ben Abda (Project Manager, Tunisia) (FAO); Samia Grimida (Project Coordinator, Libya) (FAO); Dimitris Faloutsos (Regional Deputy, GWP); Hekma Achour (Programme Officer, GWP); Sondos Njoumi (Programme Officer, GWP).

(Please upload to the portal documents tab any stakeholder engagement plan or assessments that have been done during the PIF development phase.)

Private Sector

Will there be private sector engagement in the project?

Yes

And if so, has its role been described and justified in the section B project description?

Yes

Environmental and Social Safeguard (ESS) Risks

We confirm that we have provided indicative information regarding Environmental and Social risks associated with the proposed project or program and any measures to address such risks and impacts (this information should be presented in Annex D).

Yes

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
Medium/Moderate			

E. OTHER REQUIREMENTS

Knowledge management

We confirm that an approach to Knowledge Management and Learning has been clearly described in the Project Description (Section B)

Yes

ANNEX A: FINANCING TABLES

GEF Financing Table

Indicative Trust Fund Resources Requested by Agency(ies), Country(ies), Focal Area and the Programming of Funds

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non- Grant	GEF Project Grant(\$)	Agency Fee(\$)	Total GEF Financing (\$)
FAO	GET	Regional	International Waters	International Waters: IW-3	Grant	4,416,210.00	419,540.00	4,835,750.00
Total GEF Resources (\$)						4,416,210.00	419,540.00	4,835,750.00

Project Preparation Grant (PPG)

Is Project Preparation Grant requested?

true

PPG Amount (\$)

150000

PPG Agency Fee (\$)

14250

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Programming of Funds	Grant / Non- Grant	PPG(\$)	Agency Fee(\$)	Total PPG Funding(\$)
FAO	GET	Regional	International Waters	International Waters: IW-3	Grant	150,000.00	14,250.00	164,250.00
Total PPG Amount (\$)						150,000.00	14,250.00	164,250.00

Please provide justification

Sources of Funds for Country Star Allocation

GEF Agency	Trust Fund	Country/ Regional/ Global	Focal Area	Sources of Funds	Total(\$)
Total GEF Resources					0.00

Indicative Focal Area Elements

Programming Directions	Trust Fund	GEF Project Financing(\$)	Co-financing(\$)
IW-3	GET	4,416,210.00	35456660
Total Project Cost		4,416,210.00	35,456,660.00

Indicative Co-financing

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Amount(\$)
GEF Agency	FAO	In-kind	Recurrent expenditures	1000000
Recipient Country Government	Tunisian Ministry of Agriculture, Hydraulic Resources and Fisheries	In-kind	Recurrent expenditures	5000000

Recipient Country Government	Libyan Ministry of Water Resources	In-kind	Recurrent expenditures	2416660
Others	Global Water Partnership	In-kind	Recurrent expenditures	1000000
GEF Agency	FAO	Grant	Investment mobilized	2000000
Recipient Country Government	Libyan Ministry of Water Resources	Grant	Investment mobilized	14085000
Recipient Country Government	Tunisian Ministry of Agriculture, Hydraulic Resources and Fisheries	Grant	Investment mobilized	9955000
Total Co-financing				35,456,660.00

Describe how any "Investment Mobilized" was identified

FAO-supported programmes:

- MerWat-2 Project (Italian Ministry of Foreign Affairs/FAO) (2025–2027+): \$1,000,000 mobilized to strengthen water and agricultural data systems in Libya, including geospatial platforms supporting groundwater monitoring and decision-making.
- Climate–Water–Energy–Food Nexus Governance Project (FAO + Green Climate Fund) (2025–2027+): \$1,000,000 mobilized to support integrated WEFE governance approaches, strengthening cross-sector coordination for climate-resilient water management in Libya.

Tunisia:

- Southern Oases Hydraulic Infrastructure (EBRD) (Tunisia) (2021–2028) - DTM 49250: \$6,930,000 mobilized for rehabilitation of irrigation systems, deep wells, and associated infrastructure to improve water-use efficiency and resilience in the southern oases.
- National Water and Soil Conservation Programme (DGAFTA / Government of Tunisia) (2026-2030): \$2,644,000 mobilized for runoff management and groundwater recharge infrastructure, including jessours, tabias, and infiltration systems in Medenine, Gabès, and Tataouine.
- Ongoing and annual national Medenine project (Government of Tunisia) (2026-2030): \$138,000 mobilized for local water management and land-use interventions contributing to improved water-use practices and recharge conditions.
- Ongoing and annual national Gabès project (Government of Tunisia) (2026-2030): \$243,000 mobilized for targeted water management and environmental measures supporting sustainable resource use in coastal and irrigated areas.

Libya:

- Sustainable Transition for Energy and Environment Partnership (STEP) (EU / BMZ / GIZ) (2021-2027+): \$7,150,000 mobilized to strengthen integrated water, energy, and environmental governance, including sustainable resource management and institutional capacity.

- Technical Support to Libya on the Monitoring and Maintenance of Dams (France/UNESCO) (2021-2027+): \$110,000 mobilized to strengthen monitoring and operational management of water infrastructure relevant to water storage and system resilience.
- Strengthening the Regulatory, Legislative and Strategic Water Framework in Libya (AfDB / Ministry of Water Resources) (2022-2027+): \$125,000 mobilized to support development of water governance frameworks, policies, and regulatory systems.
- RENEWAL – Climate Resilience to Water Scarcity (IFAD + UNOPS / Ministry of Environment) (2025-2030): \$6,700,000 mobilized to support climate-resilient water management, water-use efficiency, and adaptation to water scarcity.

ANNEX B: ENDORSEMENTS

GEF Agency(ies) Certification

GEF Agency Type	Name	Date	Project Contact Person	Phone	Email
GEF Agency Coordinator	FAO	2/13/2026	Jeffrey Griffin		jeffrey.griffin@fao.org
Project Coordinator	FAO	2/13/2026	Lucilla Minelli		lucilla.minelli@fao.org
Project Coordinator	FAO	2/13/2026	Lorenzo Paolo Galbiati		lorenzo.galbiati@fao.org

Record of Endorsement of GEF Operational Focal Point (s) on Behalf of the Government(s):

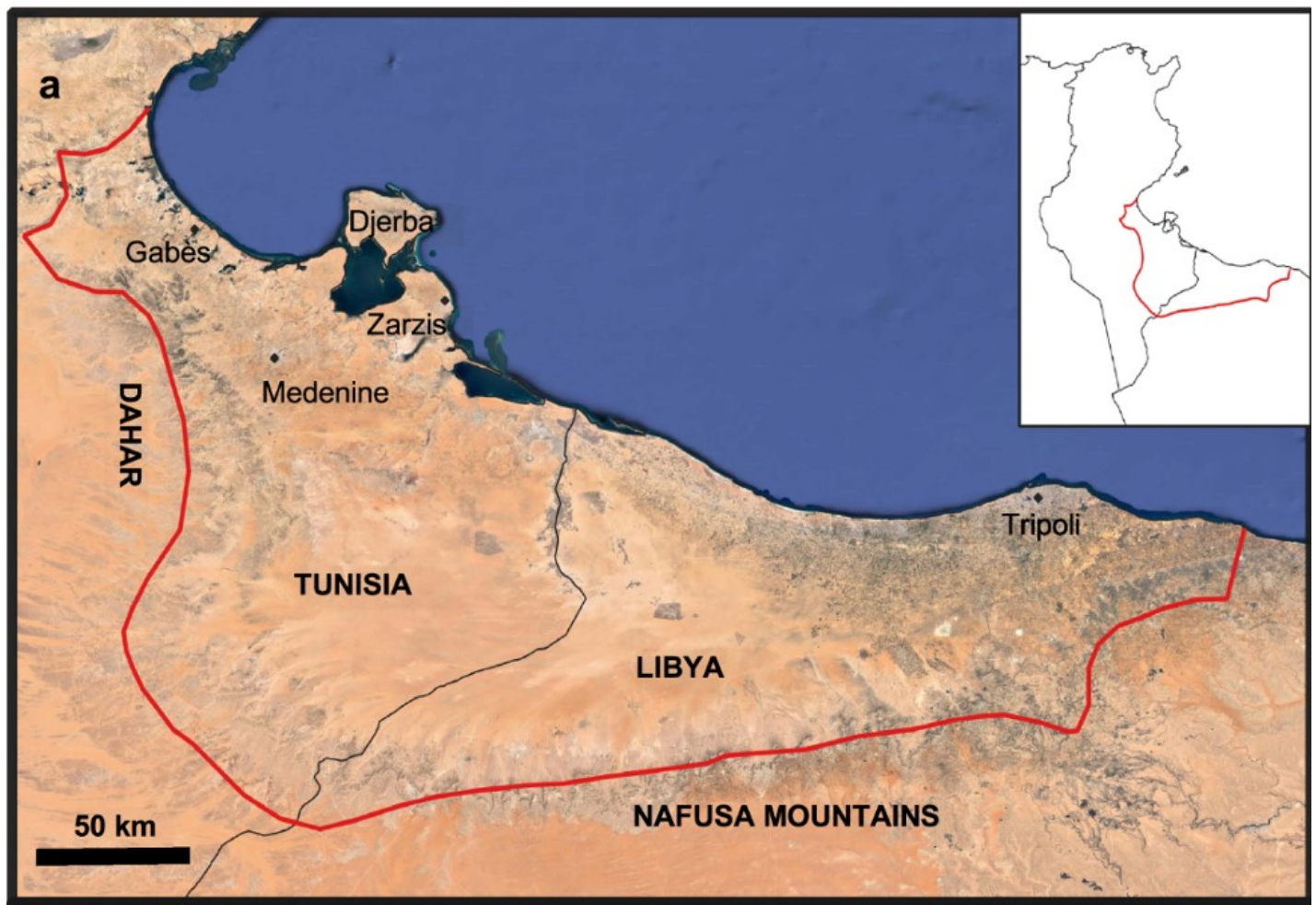
Name	Position	Ministry	Date (MM/DD/YYYY)
Sabria Bnoui	Director General for International Cooperation	Ministry of Environment	11/11/2025
Omar Sharif	Operational Focal Point	Ministry of Environment	12/22/2025

ANNEX C: PROJECT LOCATION

Please provide geo-referenced information and map where the project interventions will take place

The target transboundary project area is geographically bounded approximately between Latitudes 31°30' N and 34°00' N, and Longitudes 10°00' E and 13°30' E, covering the coastal shared aquifer zones between Southeastern Tunisia (Gabes, Medenine, Tataouine) and Northwestern Libya (Jafara plain and Tripoli region)

Please note that pilot specific geo-referenced information will be collected during PPG. See below for a map of the Djeffara Aquifer System.



ANNEX D: ENVIRONMENTAL AND SOCIAL SAFEGUARDS SCREEN AND RATING

(PIF level) Attach agency safeguard screen form including rating of risk types and overall risk rating.

Title

GEF#12282_Djeffara_Full ES Risk Screening checklist

ANNEX E: RIO MARKERS

Climate Change Mitigation	Climate Change Adaptation	Biodiversity	Land Degradation
No Contribution 0	Significant Objective 1	No Contribution 0	No Contribution 0

ANNEX F: TAXONOMY WORKSHEET

GEF 7 TAXONOMY

Annex G

Please identify the taxonomic information required in Part I, Item G by ticking the most relevant keywords/ topics/themes that best describe the project.

Level 1	Level 2	Level 3	Level 4
☐ Influencing models	☐ Transform policy and regulatory environments		
	☒ Strengthen institutional capacity and decision-making		
	☒ Convene multi-stakeholder alliances		
	☒ Demonstrate innovative approaches		
	☐ Deploy innovative financial instruments		
☒ Stakeholders	☐ Indigenous Peoples		
	☒ Private Sector	☐ Capital providers	
		☐ Financial intermediaries and market facilitators	
		☐ Large corporations	
		☒ SMEs	
		☐ Individuals/Entrepreneurs	
		☐ Non-Grant Pilot	
		☐ Project Reflow	
	☒ Beneficiaries		
	☐ Local Communities		
	☒ Civil Society	☒ Community Based Organization	
		☒ Non-Governmental Organization	
		☒ Academia	
		☐ Trade Unions and Workers Unions	
	☒ Type of Engagement	☒ Information Dissemination	
		☒ Partnership	
		☒ Consultation	
		☒ Participation	
	☒ Communications	☒ Awareness Raising	
		☐ Education	
		☐ Public Campaigns	
		☒ Behavior Change	
☒ Capacity, Knowledge and Research	☐ Enabling Activities		
	☒ Capacity Development		
	☒ Knowledge Generation and Exchange		
	☐ Targeted Research		
	☒ Learning	☒ Theory of Change	
		☒ Adaptive Management	
		☒ Indicators to Measure Change	
	☐ Innovation		
	☒ Knowledge and Learning	☒ Knowledge Management	
		☐ Innovation	
		☒ Capacity Development	
		☒ Learning	

GEF 7 Taxonomy July 2018
Revised: March 2019