



Mediterranean Coastal Zones Climate Resilience Water Security and Habitat Protection

Part I: Project Information

Name of Parent Program

Mediterranean Sea Programme (MedProgramme): Enhancing Environmental Security

GEF ID

9687

Project Type

FSP

Type of Trust Fund

GET

Project Title

Mediterranean Coastal Zones Climate Resilience Water Security and Habitat Protection

Countries

Regional, Albania, Bosnia-Herzegovina, Egypt, Lebanon, Libya, Montenegro, Morocco, Tunisia

Agency(ies)

UNEP

Other Executing Partner(s):

UN Environment/MAP, UNESCO IHP, PAP/RAC, Plan Blue, GWP-Med

Executing Partner Type

Others

GEF Focal Area

International Waters

Taxonomy

Focal Areas, International Waters, Influencing models, Stakeholders, Communications, Civil Society, Type of Engagement, Gender Equality, Gender results areas, Gender Mainstreaming, Coastal, Learning, Strategic Action Plan Implementation, Large Marine Ecosystems, Freshwater, Aquifer, Demonstrate innovative approach, Strengthen institutional capacity and decision-making, Public Campaigns, Awareness Raising, Local Communities, Community Based Organization, Non-Governmental Organization, Beneficiaries, Participation, Consultation, Gender-sensitive indicators, Sex-disaggregated indicators, Knowledge Generation and Exchange, Capacity Development, Capacity, Knowledge and Research

Rio Markers**Climate Change Mitigation**

Climate Change Mitigation 0

Climate Change Adaptation

Climate Change Adaptation 1

Duration

60In Months

Agency Fee(\$)

630,000

A. Focal Area Strategy Framework and Program

Objectives/Programs	Focal Area Outcomes	Trust Fund	GEF Amount(\$)	Co-Fin Amount(\$)
IW-2_P3	3.1 Improved governance of shared water bodies, including conjunctive management of surface and groundwater through regional institutions and frameworks for cooperation lead to increased environmental and socio-economic benefits.	GET	3,500,000	4,300,231
IW-3_P6	6.1 Coasts in globally most significant areas protected from further loss and degradation of coastal habitats while protecting and enhancing livelihoods.	GET	3,500,000	138,970,000
Total Project Cost(\$)				7,000,000 143,270,231

B. Project description summary

Project Objective

Improving water security, human and ecosystem health, and climate resilience in coastal hot spots.

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
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Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
1. Coastal Zone Management	Technical Assistance	<p>Outcome 1:</p> <p>Coastal zone sustainability in beneficiary countries enhanced through the expanded compliance with the ICZM Protocol and the adoption of national ICZM strategies, coastal plans and instruments, and improved gender equality.</p>	<p>Output 1.1:</p> <p>Multi-stakeholders' consultations on ICZM Protocol ratification and implementation.</p> <p>Output 1.2:</p> <p>Inter-Ministerial Coordination mechanisms for coastal management in place.</p> <p>Output 1.3:</p> <p>ICZM Strategies/plans developed and adopted.</p> <p>Output 1.4:</p> <p>A series of training events in ICZM, MSP and CVC adaptation developed and implemented.</p> <p>Output 1.5:</p> <p>Raised awareness on the approaches promoted by the project (with attention to the engagement of private sector).</p>	GET	3,375,500	131,463,779

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
2. Management of Coastal Aquifers and Related Ecosystems	Technical Assistance	<p>Outcome 2:</p> <p>Increased resilience to climatic variability and change, and enhanced water security of coastal populations through improved sustainability of services provided by coastal aquifers and by groundwater-related coastal habitats.</p>	<p>Output 2.1:</p> <p>Detailed assessments of the current state of priority coastal aquifers and related coastal ecosystems, vulnerability maps and recommendations for land use planning addressing relevant stakeholders, including private sector, national and local water associations and water users.</p> <p>Output 2.2:</p> <p>National Dialogues identifying potential conjunctive management solutions, including stakeholders' training modules designed and implemented.</p> <p>Output 2.3:</p> <p>National Assessments of Submarine Groundwater Discharges and of Marine – Freshwater Interactions.</p> <p>Output 2.4:</p> <p>Priority aquifers coastal management plans produced including design and field testing of aquifer monitoring multi-purpose networks and protocols</p>	GET	3,291,500	10,332,000

Project Component	Financing Type	Expected Outcomes	Expected Outputs	Trust Fund	GEF Project Financing(\$)	Confirmed Co-Financing(\$)
				Sub Total (\$)	6,667,000	141,795,779
Project Management Cost (PMC)						
				GET	333,000	1,474,452
				Sub Total(\$)	333,000	1,474,452
				Total Project Cost(\$)	7,000,000	143,270,231

C. Sources of Co-financing for the Project by name and by type

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Amount(\$)
Others	UN Environment/MAP, UNESCO-IHP, PAP/RAC, Plan Bleu and GWP-Med.	In-kind	13,609,361
Government	Algeria	In-kind	4,551,270
Government	Egypt	In-kind	4,064,000
Government	Lebanon	In-kind	57,723,600
Government	Libya	In-kind	600,000
Government	Montenegro	In-kind	6,100,000
Government	Morocco	In-kind	18,000,000
Government	Tunisia	In-kind	38,622,000
Total Co-Financing(\$)			143,270,231

Agency	Trust Fund	Country	Focal Area	Programming of Funds	NGI	Amount(\$)	Fee(\$)
UNEP	GET	Regional	International Waters		No	7,000,000	630,000
Total Grant Resources(\$)						7,000,000	630,000

E. Non Grant Instrument

NON-GRANT INSTRUMENT at CEO Endorsement

Includes Non grant instruments? **No**

Includes reflow to GEF? **No**

200,000

Agency	Trust Fund	Country	Focal Area	Programming of Funds	NGI	Amount(\$)	Fee(\$)
UNEP	GET	Regional	International Waters		No	200,000	18,000
Total Project Costs(\$)						200,000	18,000

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)
0.00	12500000.00	0.00	0.00

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)
	12,500,000.00		

Indicator 4.2 Area of landscapes that meets national or international third party certification that incorporates biodiversity considerations (hectares)

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 Forest (HCVF) loss avoided

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

Documents (Please upload document(s) that justifies the HCVF)

Title	Submitted
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Indicator 5 Area of marine habitat under improved practices to benefit biodiversity (excluding protected areas)

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

Indicator 5.1 Number of fisheries that meet national or international third party certification that incorporates biodiversity considerations

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

Type/name of the third-party certification

Indicator 5.2 Number of Large Marine Ecosystems (LMEs) with reduced pollutions and hypoxia

Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (achieved at MTR)	Number (achieved at TE)
0	0	0	0

LME at PIF

LME at CEO Endorsement

LME at MTR

LME at TE

Indicator 5.3 Amount of Marine Litter Avoided

Metric Tons (expected at PIF)	Metric Tons (expected at CEO Endorsement)	Metric Tons (Achieved at MTR)	Metric Tons (Achieved at TE)

Indicator 7 Number of shared water ecosystems (fresh or marine) 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		Mediterranean Sea		
Count	0	1	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)
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Shared Water Ecosystem	Rating (Expected at PIF)	Rating (Expected at CEO Endorsement)	Rating (Achieved at MTR)	Rating (Achieved at TE)
Mediterranean Sea		4		<input type="checkbox"/>
Select SWE				

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)
Mediterranean Sea		4		<input type="checkbox"/>
Select SWE				
Select SWE				<input type="checkbox"/>

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)
Select SWE		1		<input type="checkbox"/>
Select SWE				<input type="checkbox"/>

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)
Select SWE		1		<input type="checkbox"/>
Select SWE				<input type="checkbox"/>

Indicator 11 Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment

	Number (Expected at PIF)	Number (Expected at CEO Endorsement)	Number (Achieved at MTR)	Number (Achieved at TE)
Female		2,000		
Male		2,000		
Total	0	4000	0	0

PART II: Project JUSTIFICATION

1. Project Description

Overview of the MedProgramme and context of the Child Project 2.1

The GEF/UN Environment “Mediterranean Sea Programme (MedProgramme): Enhancing Environmental Security” (2019-2024)[1]¹ represents the first GEF programmatic multi-focal area initiative in the Mediterranean Sea aiming to operationalize priority actions to reduce major transboundary environmental stresses in its coastal areas while strengthening climate resilience and water security and improving the health and livelihoods of coastal populations. The MedProgramme is implemented in nine beneficiary countries sharing the Mediterranean basin: Albania, Algeria, Bosnia and Herzegovina, Egypt, Lebanon, Libya, Montenegro, Morocco and Tunisia. Its eight Child Projects[2]² cut across four different Focal Areas of the Global Environment Facility (International Waters [IW], Biodiversity [BD], Chemicals and Waste [CW], and Climate Change [CC]) and involve a wide spectrum of developmental and societal sectors, ranging from banking institutions, the private sector, governmental and non-governmental bodies, industry, research, media, and various other organizations. It builds on the MedPartnership and ClimVar & ICZM[3]³ GEF projects which have enriched the knowledge on the Mediterranean environment and unraveled the implications of climate change and variability; strengthened countries’ mutual trust, cooperation and common purpose; consolidated the partnership among countries, UN bodies, civil society organizations, bilateral donors and the European Union (EU); and tested on the ground the feasibility and effectiveness of technical and policy instruments aimed at addressing major present and future threats to environmental sustainability and climate related impacts.

The eight Child Projects (CP) of the MedProgramme (Figure 1 and Table 1) are expected to deliver a set of complementary results embracing three categories of priorities identified by the TDA for the Mediterranean Sea which are translated into three components of the programme: i) Reduction of Land-Based Pollution in Priority Coastal Hotspots and measuring progress to impacts; ii) Enhancing Sustainability and Climate Resilience in the Coastal Zone; and iii) Protecting Marine Biodiversity.

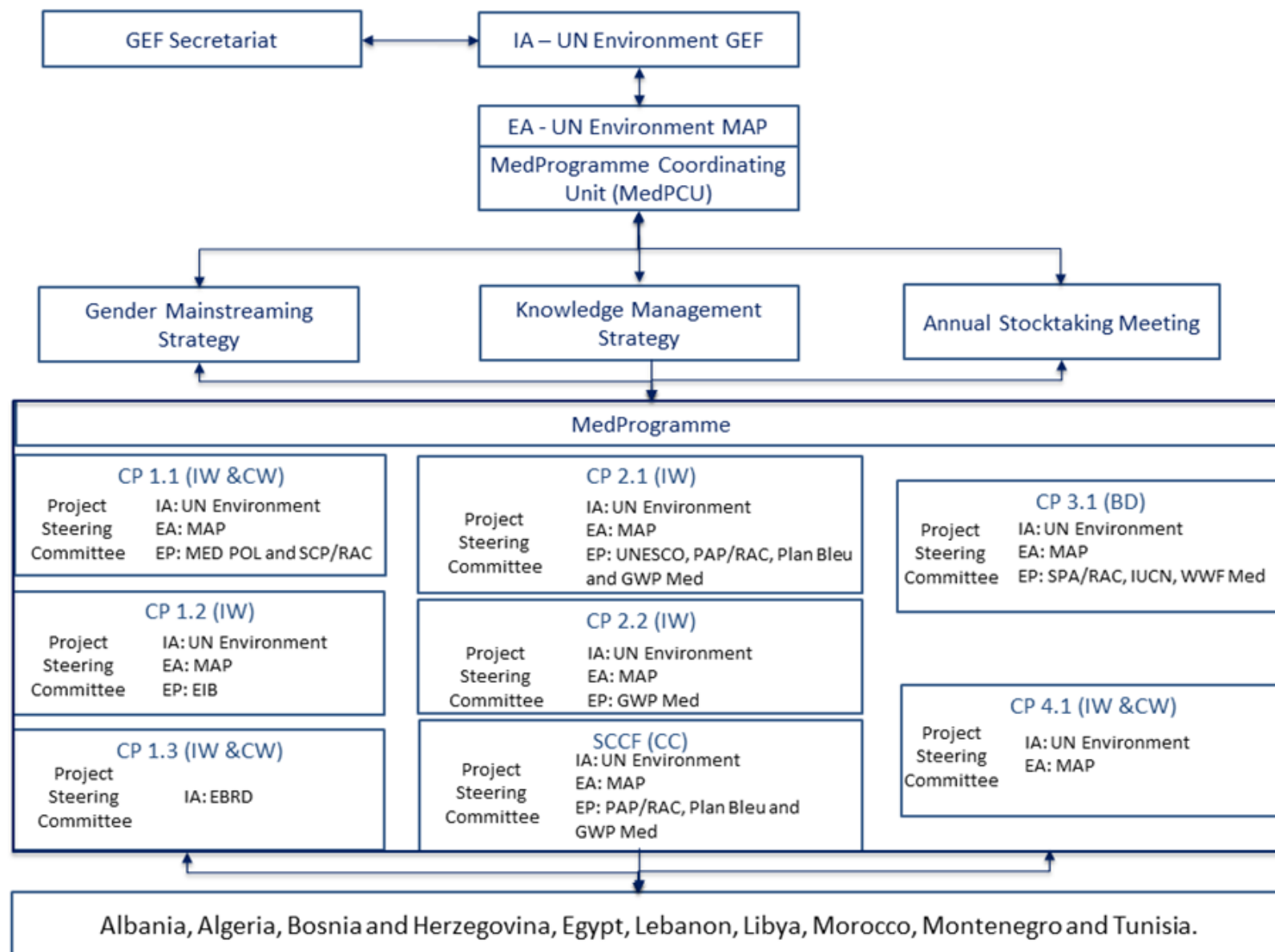


Figure 1 MedProgramme Structure

Table 1 MedProgramme Components, Child Projects and GEF Focal Areas

Mediterranean Sea Programme (MedProgramme)		
MedProgramme Component	Child Project	GEF Focal Areas
1. Reduction of Land Based Pollution in Priority Coastal Hotspots, and measuring progress to impacts.	1.1 “Reducing Pollution from Harmful Chemicals and Wastes in Mediterranean Hot Spots and Measuring Progress to Impacts”	IW and CW
	1.2 “Mediterranean Pollution Hot Spots Investment Project”	IW
	1.3 “Mediterranean Sea Finance for Water Systems and Clean Coasts (FINWACC)”	IW and CW
2. Enhancing Sustainability and Climate Resilience in the Coastal Zone.	2.1 “Mediterranean Coastal Zones Climate Resilience Water Security and Habitat Protection”	IW
	2.2 “Mediterranean Coastal Zones: Managing the Water-Food-Energy and Ecosystem NEXUS”	IW
	SCCF “Enhancing regional climate change adaptation in the Mediterranean Marine and Coastal Areas”	CC

Mediterranean Sea Programme (MedProgramme)		
MedProgramme Component	Child Project	GEF Focal Areas
3. Protecting Marine Biodiversity	3.1 “Management Support and Expansion of Marine Protected Areas in Libya”	BD
4. Knowledge Management and Programme Coordination	4.1 “Mediterranean Sea Large Marine Ecosystem Environment and Climate Regional Support Project”	IW and CW

The fourth component (Knowledge Management and Programme Coordination) is comprised of Child Project 4.1 “Mediterranean Sea LME Environment and Climate Regional Support Project” which plays a key role within the MedProgramme as it “implements mechanisms for Programme-wide learning and dissemination of knowledge, monitoring the Programme’s progress to impacts, and fostering synergistic interactions among Child Projects”. Within the GEF programmatic approaches there is a need to ensure programme coherence and impact through coordination among diverse sets of multi-focal area Child Projects contributing to the same programme outcomes. A Support Project functions as a trait d’union (a common link) among Child Projects by providing overall coordination of the programme portfolio, resource-saving services, a robust system to managing knowledge effectively and a sound action plan for gender mainstreaming.

It is in this context that Child Project 2.1 “Mediterranean Coastal Zones: Water Security, Climate Resilience and Habitat Protection” will be carried out. Child Project 2.1 will play a crucial role in achieving the desired impacts of the MedProgramme by assisting countries, coastal zone managers and populations to protect and use sustainably the available coastal freshwater supply threatened by evolving climatic conditions, pollution, and competition at the water nexus, and to adopt coastal zone management and land use policies respectful of the intrinsic vulnerabilities, carrying capacity, and cultural, social and economic functions of the Mediterranean coasts and ecosystems. Consistently with the design of the MedProgramme, Child Project 2.1 will operate in synergy with all the other Child Projects under Components 1 and 2 addressing the reduction of pollution from nutrients and persistent toxic substances in coastal hotspots of (Child Projects 1.1, 1.2, 1.3), the reuse of treated wastewaters (Child Project 1.2), the mainstreaming of climate change adaptation approaches in ICZM planning (the SCCF Project), and the resolution of conflicts at the water nexus (Child Project 2.2). The synergistic interactions among these projects will trigger catalytic impacts that will be enhanced and disseminated throughout the region by the MedProgramme-wide knowledge management and coordination project 4.1. Last but not least, Child Project 2.1 will by design bring together various executing partners playing important roles and actively engaged in the region, but so far acting primarily in a fragmented and sectorial way – PAP/RAC, UNESCO IHP, GWP Med and Plan Bleu. Their interaction may prove very effective in producing long lasting beneficial impacts in coastal zone management approaches in the Mediterranean region, better integration of hydrological, geological and environmental sciences with land use and water resources planning; education with capacity reinforcement; monitoring with policy making.

[1] GEF Lead Implementing Agency: UN Environment. Other GEF Implementing Agency: European Bank for Reconstruction and Development (EBRD). Leading Executing Agency: UN Environment/MAP. Executing partners: UNESCO International Hydrological Programme (IHP), European Investment Bank (EIB), Global Water Partnership –

Mediterranean (GWP-Med), WWF Mediterranean Programme Office (WWF MedPO), IUCN, Priority Actions Programme Regional Activity Centre (PAP/RAC), Plan Bleu Regional Activity Centre (Plan Bleu), Specially Protected Areas Regional Activity Centre (SPA/RAC) and the Sustainable Consumption and Production Regional Activity Centre (SCP/RAC).

[2] At the time of its approval in October 2016, the MedProgramme was comprised of seven Child Projects. Subsequently, a Mediterranean climate change adaptation project was developed by UN Environment/MAP for financing through the Special Climate Change Fund (SCCF). It was agreed by the UN Environment/MAP, UN Environment and the GEF Secretariat that this SCCF project would be managed for all intents and purposes as an additional Child Project of the MedProgramme. Hence the reference to eight Child Projects of the MedProgramme.

[3] More info on MedPartnership, ClimVar and ICZM (Integration of climatic variability and change into national strategies to implement the ICZM Protocol in the Mediterranean) projects: <http://www.themedpartnership.org/>, <https://iwlearn.net/iw-projects/2600> and <https://iwlearn.net/iw-projects/3990>.

describe any changes in alignment with the project design with the original pif

No changes in the expected outcomes, indicators or targets have been introduced with respect to the approved Programme Framework Document (PFD) of the MedProgramme..

Algeria decided to endorse the MedProgramme on November 2017 following a re-organization in the government and frequent consultations with UN Environment/MAP and UN Environment GEF. In the Letter of Endorsement, Algeria reaffirms the alignment of the Government's national priorities with the goals of the MedProgramme and the commitment of the country to the global environmental conventions. For this reason Algeria has been added to the programme as beneficiaries of activities under several Child Projects, including the current one.

The project is submitted with a co-financing commitment of 475,980,631 USD. This pledge is sensibly higher than the one indicated in the PFD, i.e., greater than 25,000,000 USD. The higher level of co-financing is due to a thorough consultation with the countries and executing partners which was made during the preparation phase of Child Project 2.1 to identify all the initiatives, projects, investments, strategies ongoing at the national and regional levels which would contribute to the achievement of the goals of Child Project 2.1.

To date, co-financing commitments have been received from seven of the nine countries participating in the project (Algeria, Egypt, Lebanon, Libya, Montenegro, Morocco and Tunisia) and by all the executing partners UN Environment MAP, UNESCO IHP, PAP/RAC, Plan Bleu and GWP Med. The two remaining countries – Albania and Bosnia and Herzegovina – have not yet transmitted their co-financing letters. Both countries are currently working to prepare their respective co-financing letters, which will then need to be cleared by several internal bodies and ministries before being submitted. Considering that the current co-financing pledge of Child Project 2.1 is much higher than the committed figure at the PFD stage, and to avoid delays in the submission of the Child Project 2.1, the GEF CEO Endorsement Request is submitted without the co-financing contribution of Albania and Bosnia and Herzegovina. However, these commitments will be included in the project co-financing budget as soon as the letters from the two countries are received. Specific justification for this change will be prepared during the inception phase of the MedProgramme to be submitted to for consideration to the first Steering Committee Meeting of Child Project 2.1

A. PROJECT DESCRIPTION

1) THE GLOBAL ENVIRONMENTAL AND ADAPTATION PROBLEMS, ROOT CAUSES AND BARRIERS THAT NEED TO BE ADDRESSED.

The full-fledged Transboundary Diagnostic Analysis (TDA) carried out in 2005 as part of the Global Environment Facility (GEF)/UN Environment project “Determination of priority actions for the further elaboration of the Strategic Action Program for the Mediterranean Sea”, identified, and analyzed in some detail, four major transboundary environmental concerns (Table 2). They are:

1. Decline of biodiversity due to conversion and degradation of critical habitats, introduction of alien species, pollution in the form of excess nutrients and toxic wastes;
2. Decline in seawater quality due to inadequate sewage treatment, lack of application of best practice in the agricultural use of fertilizers and pesticides, inadequate controls on atmospheric emissions of heavy metals and persistent organic pollutants (POPs), inadequate discharge control for industries bordering the sea;
3. Human health risks due to exposure to POPs, the consumption of contaminated seafood, direct and indirect contact with seawater that is contaminated with pathogens and/or viral agents;
4. Degradation of coastal ecosystems and loss of related services due to growing demographic pressure and unregulated coastal development.

Table 2 Mediterranean Sea Large Marine Ecosystem (LME) - Transboundary Diagnostic Analysis

Mediterranean Sea Large Marine Ecosystem (LME) - Transboundary Diagnostic Analysis		
Major Environmental Concerns	Statement of the causes	Main Issues of Transboundary Concern
Decline of Biodiversity	Pollution (sewage, oil, nutrients, etc.), invasive species, introduced species, land reclamation, river damming and flow modification, over-fishing, by-catch, and adverse effects of fishing gear and uses on marine habitats (e.g. bottom trawling), solid waste disposal at sea, uncontrolled tourist presence in ecologically sensitive areas, as well as inadequate public and stakeholder awareness, and inadequate or non-existent legislation and available enforcement means.	Land Based Pollution Degradation and Conversion of Critical Habitats: Sea Grass Meadows; Coastal Wetlands and Lagoons. Overexploitation of Marine Living resources Alien Species Introduction

Decline in Sea Water Quality	Land based sources of marine pollution, both point and non-point, determine increasing trends in eutrophication and its related oxygen deficiency and bloom of nuisance species; presence of hot spots of pollution (125 identified by TDA) leading to decline in overall water quality, loss of coastal habitats and biodiversity, and human health problems.	Land Based Pollution: (i) point sources (excess nutrients, toxics and persistent toxic substances). (ii) non-point sources (mostly nutrients from agriculture, and sediments). Anthropogenic Pressures on Coastal Zones
Human Health Risks	Pollutants that degrade the ecosystem also present risks to human health, including heavy metals, organochlorines, pesticides, hydrocarbons, and the like, but also microbial and viral pollution. In addition, the response of the ecosystem to stress may induce toxicity, such as toxic dinoflagellates that arise from eutrophic conditions in some instances. This may affect human health in the region. Primary pathways for human health risks include ingestion of water or seafood products, contact with contaminated seawater (or in some cases beaches), and perhaps contact with contaminated sea food (for marine products workers).	Land Based Pollution Anthropogenic Pressures on Coastal Zones
Degradation and loss of coastal freshwater resources, and of coastal ecosystem services.	Growing population and unregulated coastal development interfere with coastal processes, cause groundwater salinization, and degradation of coastal ecosystems	Anthropogenic pressure on Coastal Zones

Ten years later, two follow up GEF/UN Environment projects complemented the 2005 TDA with supplemental information regarding two elements of the physical environment – climate change and variability, and the processes at the freshwater - seawater interface, including coastal aquifers – whose critical importance in determining present and future environmental security in the Mediterranean Sea and its coastal regions, had only recently been fully realized. The results of these supplementary diagnostics added new perspectives to the overall current state of the Mediterranean Sea and its coastal areas, that will guide future remedial and adaptation actions. These projects were:

- The GEF/UN Environment project “Integration of climatic variability and change into national strategies to implement the ICZM Protocol in the Mediterranean” (ClimVar & ICZM Project) (completed in 2015) resulted in guidelines for adapting to climate variability and change in Mediterranean Sea littoral countries, and in the development of a pilot Integrated Coastal Zone Management (ICZM) plan integrating measures related to climate variability and change ready for implementation.
- The GEF/UN Environment project “Strategic Partnership for the Mediterranean Large Marine Ecosystem-Regional Component: Implementation of Agreed Actions for the Protection of the Environmental Resources of the Mediterranean Sea and Its Coastal Areas” (MedPartnership) (completed in 2015) produced amongst others an assessment of coastal aquifers and related coastal ecosystems in all Southern and Eastern Mediterranean and Adriatic countries, a **Supplement on Coastal Aquifers** to the 2005 TDA, and sub-regional Action Plans for the protection and sustainable use of coastal aquifers and related ecosystems (wetlands and humid zones) for the Adriatic and for the Southern and Levantine Basin countries.

The two projects provided conclusive evidence that:

(i) Climate change and variability will increasingly affect Mediterranean coasts and the livelihoods of ever-growing coastal populations, compounding all other issues of transboundary concern, with particularly severe impacts in identified hot spots;

(ii) The critical role played by coastal aquifers within the context of the coastal zone including the shallow marine environment is fully confirmed.

It can be now stated, based on solid information, that:

- Coastal aquifers are a major water resource along the Mediterranean coastline, and often represent the main source of drinking water for the growing littoral populations;
- Submarine groundwater discharges are large, and in places superior to surface water inflows. Hence coastal aquifers contribute to, and sustain shallow marine ecosystems;
- Major coastal wetlands, lagoons, humid zones and coastal habitats, providing very valuable services and contributing to coastal livelihoods and biodiversity, are all in part or totally dependent on groundwater regimes.

In spite of all this, the regional picture that emerged from the assessment of the current state of these critically important resources was one of generalized neglect and progressive degradation.

2A) BASELINE SCENARIO: REGIONAL LEVEL

The Mediterranean coastal zones

The total population of the Mediterranean countries grew from 276 million in 1970 to 466 million in 2010 and is predicted to reach 529 million by 2025. More than a third of this population lives in coastal territories totaling less than 12% of the surface area of the Mediterranean countries. The population of the coastal regions grew from 95 million in 1979 to 143 million in 2000 and could reach 174 million by 2025. Besides this constant growth of the permanent population, coastal tourism is another driver for coastal urbanization. The Mediterranean region hosts one third of the world's tourists which are attracted by the clean and transparent Mediterranean waters, the beaches and the scenic beauty of the Mediterranean landscapes and seascapes. Tourism is a huge consumer of natural resources used to supply visitors with a variety of goods and services: drinking water – an extremely scarce resource in many coastal areas; food – sometimes causing pressure on local production, especially of seafood, and leading to over-fishing; electric power and cooling/heating facilities – making tourism a massive consumer of energy. Moreover, the coastal tourism industry produces serious environmental impacts by causing marine and fresh water pollution through the discharge of sewage and the disposal of considerable quantities of solid waste.

Since the 1960s, due to these trends, pressures on the coastal zones have been growing throughout the Mediterranean. The fact that sea level rise is becoming increasingly certain does not stop this trend, and in some places does not even slow it down. The so-called ribbon or linear development (including infrastructure) continues along the Mediterranean coasts, exposing properties and humans to the risks caused by climate change in general, and sea level rise in particular. In addition to the fact that this kind of development is extremely inefficient and unsustainable, the only option for adaptation to sea level rise in such cases is to retreat from the coastline. Therefore, it is important to make governments, populations and investors aware of the problem and, in the longer run, ensure that the costs of remedies are born by the property owners.

High concentration of population and economic activities in the coastal zones exerts numerous pressures on resources; this relates for example to space occupation, to the water/food/energy/ecosystem nexus. Densely populated coastal regions, coupled with tourism activities, generate high pressures on water resources, in particular on aquifers as major freshwater resource; and on ecosystems, habitats, biodiversity and landscapes, emitting nutrients and wastewater, solid waste, marine litter and microplastics, as well as industrial waste into the environment. It is of utmost importance to address these issues at their origin, i.e., to create conditions for minimizing pressures and impacts on the environment, to propose responses and solutions that address multiple pressures and influence drivers in a way to lead development towards sustainability.

These challenges could and should be handled by applying the integrated approach to the management of coastal zones that helps to control urbanization; to preserve the integrity of coastal and marine ecosystems; and to guide towards sustainable use of natural and cultural resources. It is by revealing and managing the space/water/food/energy/ecosystem nexus that the future development can be oriented towards sustainability and the efficient environmental protection ensured. Applying integrated coastal zone management (ICZM) principles will allow integrating environmental protection with spatial planning and economic development i.e., to integrate policies and establish frameworks for cooperation of all concerned stakeholders aimed at influencing current and future practices. Their active participation, raised awareness and sufficient capacity are the best guarantees of the needed change of behavior towards the environment. By acting on the source of pollution in application of the prevention and precautionary principles it is possible to cope with the pollution before it happens, this being the crucial dimension for attaining sustainability.

Impacts of climate change and variability

Research on climate variability and its impacts in the Mediterranean along with the findings contained in the Fifth Assessment Report of the IPCC are all in agreement on the broad future trends in climate variability in the Mediterranean, in spite of the complexity of factors controlling the Mediterranean climate. According to that report, by the end of the century the rise in temperatures is expected to be between 2°C and 4°C for the medium-low emissions scenario (RCP 4.5). At the same time, overall rainfall is also likely to decrease while the occurrence of extreme climatic events (flooding and drought) ought to intensify by 2100. An analysis of IPCC model projections for the 21st century finds a continuing decrease in precipitation that extends throughout the Mediterranean region and reaches values as high as 20% less than the current mean precipitation by the end of the century. The sea level is predicted to rise by between 30 cm and 40 cm by 2100, and changes will occur to water mass circulation. Marine acidification is likely to increase with some dramatic consequences to the balance of marine and coastal biodiversity.

During the 20th century, air temperature in the Mediterranean basin was observed to have risen by 1.4 °C to 4 °C depending on the sub-region. As such, the countries of the Mediterranean are already witnessing the impacts of climate change/variability in the coastal zone and watersheds of the Mediterranean Large Marine Ecosystem, such as decreasing water availability, increased incidents of flooding and forest fires. Climate variability in the Mediterranean is controlled by physical processes at both the local level, such as changes in the surface properties and land use, and at the global level, such as the changes in the large scale atmospheric circulation associated with global warming, the North Atlantic Oscillation (NAO), tropical monsoon and El Nino Southern Oscillation (ENSO). It should be noted that over the last 40-50 years the sea level trends within the Mediterranean basin differ significantly (increasing and decreasing) from those of the nearby Atlantic Ocean. It is unclear for how long the behavior of the Mediterranean Sea will differ from the open ocean, although it is unlikely that this will continue for more than 20-30 years. This also raises the question whether the Mediterranean Basin future sea level scenarios can be based on the global ones, as they do not include the relevant forcing mechanisms.

The countries of the Mediterranean recognize that with current projections there will be a number of climate impacts, including increased summer temperatures and decreased annual precipitation, increased water-related extreme phenomena like floods and persistent droughts, greater water scarcity and increased desertification, the loss of or shift in vegetation zones, threatened food production as a result of increased irrigation demands and more numerous incidents of plant diseases, human health hazards, particularly with regard to infectious diseases and increased heat-related mortality. While it is critically important that research work advances our understanding of how climate variability will impact the coastal zone communities, natural resources and marine and coastal biodiversity of the Mediterranean, it is equally important to ensure that scientific information be made accessible to decision makers, and that actions be taken to integrate elements to improve sustainability in view of future climatic scenarios into current land use and water policies and practices, particularly in coastal zones.

Regional scale studies suggest that the Mediterranean is particularly vulnerable to increased flooding by storm surges as sea level rises: a one-meter rise in sea level would cause at least a six-fold increase in the number of people experiencing such flooding in a typical year, without considering population growth. All coastal wetlands appear threatened. Case studies of coastal cities (such as Venice and Alexandria), deltas (Nile, Po, Rhone and Ebro), and islands (Cyprus) support the need to consider climate change in coastal planning. However, the critical issues vary from site to site and from setting to setting. In deltaic areas and low-lying coastal plains, the effects of climate change, particularly sea level rise, are already considered an important issue, but elsewhere this is not the case. The case for mainstreaming considerations of climate change in coastal planning is further supported by the

findings of the ClimVar & ICZM Project, which evaluated climate-related hazards in Mediterranean coastal areas and produced a coastal risk index (based on threats of erosion, flooding, and seawater intrusion), resulting in the identification of numerous climate risk hotspots in the region (Figure 2).

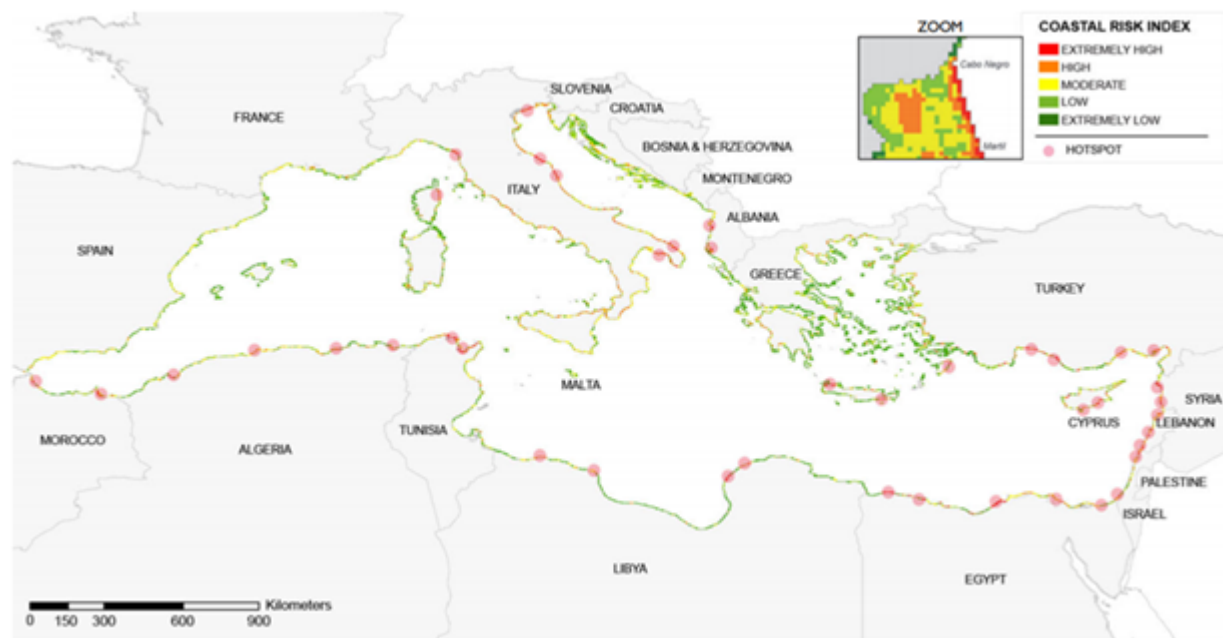


Figure 2 Map of assessed coastal risk indices (based on climate-related hazards) and hotspots in the Mediterranean (MedSea Foundation and Plan Bleu, 2016)

When exploring the link between ICZM and climate variability and change, one should not lose sight of the fact that climate change mainly comes into play by accentuating threats and problems – sometimes opportunities – that already exist. Currently, problems in Mediterranean coastal zones do not stem from the impact of climate change but from the impact of unsustainable development models upon which economic systems are based. The problem of coastal erosion is a good example of this. It is a major challenge for many Mediterranean coastal zones but it is mainly related to:

- coastal installations: sea defense facilities which prevent shore drift and accelerate erosion down shore, walls and rock armor at the top of the beach, destruction of dunes by treading or construction, etc.

- river installations: it is estimated that sediment input from rivers decreased by 90% in the second half of the 20th century because of the construction of dams and the massive extraction of granular material.

One of the primary climate change impacts is on freshwater resources availability for the main economic sectors and for dependent ecosystems. Situations of water scarcity in combination with expected climate change-related phenomena will lead to reduced runoff and groundwater recharge and consequently to diminished water quality and quantity in some countries. Lower precipitation and increasing temperatures in the southern and eastern Mediterranean will exacerbate aridness, land degradation and desertification. Sea level rise and storm-related floods will make low-lying zones and coastal activities increasingly vulnerable to submersion and beaches vulnerable to erosion.

Mediterranean coasts are highly urbanized, and due to the high predominance of summer tourism, most of the touristic facilities tend to locate as close to the sea as possible. Rising sea levels may endanger a high proportion of the coastal facilities including adjacent infrastructure. Losses of coastal and marine habitats and ecosystems are also largely implied.

Economic loss due to decreased tourism will significantly impact the region, particularly men and women who derive their livelihoods from the sector. Additionally, the Mediterranean populace will face climate risks themselves, further exposing the socioeconomically vulnerable, and reducing their capacities and opportunities to adapt. In this context, women are particularly vulnerable: as they fulfill traditional roles of provisioning household water and fuel, their time poverty (the opportunity cost of hours lost on performing unpaid care/domestic work, that could have otherwise been used for remunerative economic activity) is likely to increase. With the predicted loss of livelihoods from the tourism sector, women also face increasing pressure in their traditional and cultural gender roles, as these too heavily rely on steady water access. This will be exacerbated by the impact of climate change and will affect education, traditional gender roles, sanitation, etc., and due to lack of meaningful employment opportunities, the region also exhibits a high incidence of migration. Migrants from this region are overwhelmingly male, and often women are left behind to care for themselves, their households, and particularly, the children and the elderly. Combined with decreased resource access and potential livelihood-loss from the myriad climate risks in the region, women are likely to become more vulnerable in the business-as-usual scenario. A gender assessment has been conducted and an action plan has been drawn up based on the findings, that expounds on these social and gender issues to be addressed through the project components (See Annex P). These are in line with the MedProgramme's overarching Gender Mainstreaming Strategy (Annex U).

Coastal aquifers and groundwater-related coastal wetlands

In the MedPartnership, 70 main coastal aquifers and 26 representative coastal wetlands (Figure 3) were assessed to consolidate existing knowledge and determine connections among these natural systems and human populations (Figure 4). The findings of these assessments reveal an alarming situation:

- Generalized coastal groundwater degradation contributes to exacerbating issues of transboundary concern at the LME level, such as nutrient pollution and degradation of habitat and coastal freshwater dependent ecosystems.
- Expert opinions and the existing quantitative data on coastal groundwater quality indicate a regionally preponderant medium to high level of contamination from nutrients, other hazardous substances and salinization, the latter being often attributed to seawater intrusion.
- Scientific knowledge and public awareness of coastal aquifers is scant or non-existent in most countries. Monitoring is occasional at best, and lacks modern technologies and strategic, multi-purpose design.
- As a consequence, management frameworks for coastal groundwater resources are absent, and these resources are not formally recognized as critical for the sustainability of coastal developments, and as being highly vulnerable.
- Unregulated exploitation is common, and no quality-quantity safeguards exist or are applied. Conflicts among uses (agriculture, domestic, tourism, environment and energy) are common and potentially disruptive.
- In spite of the abundant scientific information on Mediterranean wetlands, and the prevalence of protection schemes, most of the wetlands are reported as having their functionality altered to different degrees. Half of the wetlands studied are moderately altered, and the other half are highly to very highly altered.

No specific laws or policies exist in any of the countries protecting and regulating the use of coastal groundwater, considering its strategic value, its high vulnerability to contamination, and its interactions with the sea. General water laws apply, normally with little or no discrimination between surface and groundwater. The same is true for the institutional settings.

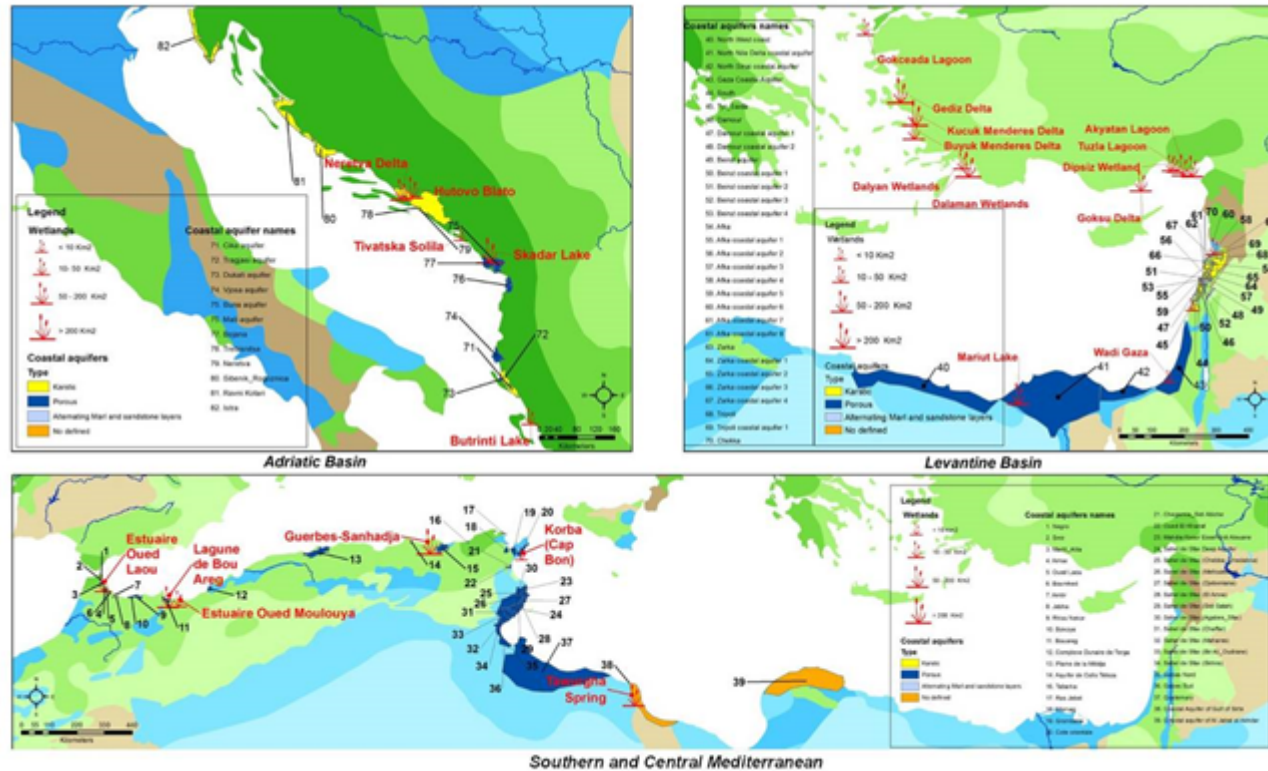


Figure 3 Location, type and name of the main coastal aquifers and representative wetlands assessed in the Adriatic, Levantine and Southern and Central Basins of the Mediterranean Sea for the MedPartnership (UN Environment/MAP and UNESCO-IHP, 2015)

Aquifer name / Country	Pollution from Nutrients	Pollution from other Pollutants	Human Dependency for Domestic Uses	Links with Ecosystems	Salinization
Albania					

Aquifer name / Country	Pollution from Nutrients	Pollution from other Pollutants	Human Dependency for Domestic Uses	Links with Ecosystems	Salinization
Buna					
Cika					
Dukati					
Mati					
Tragiasi					
Vjosa					
Algeria					
Collo-Teleza					
Comp. Dunaire Terga					
Plaine de la Mitidja					
Annaba					
Bosnia and Herzegovina					
Trebinjica					
Egypt					
North Nile Delta					
North Sinai					
Northwest Coast					
Lebanon					
Afka					
Beirut					

Aquifer name / Country	Pollution from Nutrients	Pollution from other Pollutants	Human Dependency for Domestic Uses	Links with Ecosystems	Salinization
Chekka					
Damour					
South					
Tripoli					
Tyr-Saida					
Zarka					
Libya					
Gefara Plain					
Montenegro					
Boka Bay					
Bojana					
Morocco					
Bou-Areg					
Rhis-Nekkor					
Martil-Alila					
Negro					
Oued laou					
Smir					
Tunisia					
Chegarnia-Sidi Abicha					

Aquifer name / Country	Pollution from Nutrients	Pollution from other Pollutants	Human Dependency for Domestic Uses	Links with Ecosystems	Salinization
Cote Orientale					
Gabes					
Grombalia					
Mahdia					
Mornag					
Ras Jebel					
Sahel Sfax (deep)					
Sahel Sfax (shallow)					
Tabarka					

Level of concern

Very Low	Low	Medium	High
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Figure 4 Environmental and socioeconomic indicators of the current state of Mediterranean coastal aquifers and indications of the associated level of concern (UN Environment/MAP and UNESCO-IHP, 2015)

Coastal wetlands

The assessment of all major Mediterranean coastal wetlands carried out in the MedPartnership has confirmed that they are all to various degrees dependent on coastal groundwater resources, and that their functioning is being impaired by the decreasing water quantity and quality of the coastal aquifers feeding the wetlands.

Coastal aquifers support coastal freshwater and brackish water habitats with rich biodiversity. Such habitats include coastal wetlands, which provide critical ecosystem services such as: securing health and productivity of fisheries; sustaining nursery and breeding habitats for near-shore commercial and recreational fisheries; and filtering and detoxifying by suspension feeders and submerged vegetation. They are also important resting sites for migrating birds. Degradation of coastal aquifers can heavily impact wetlands and humid areas. The threats to wetlands from aquifer mismanagement are twofold:

- The excessive use of groundwater resources from coastal aquifers can result in the drying up of the wetlands that depend upon them.
- Saline intrusion and pollution, which occur when coastal aquifers are over-exploited, and pollutants introduced into the aquifers, can degrade the health and functioning of wetlands.

The loss of the filtering functions of wetlands due to declining freshwater quality, including groundwater, is linked to the increasing occurrence of harmful algal blooms, fish kills, loss of shellfish, oxygen depletion and beach closures. Increasingly, the loss or change of vegetation in coastal ecosystems has affected these systems' ability to protect against shore erosion, coastal flooding and storm events.

Figure 5 sets forth the results of the [Mediterranean Wetland Assessment](#) carried out as part of MedPartnership, showing alarmingly growing pressures due in particular to groundwater extraction, urbanization, and diffuse pollution from agriculture.

Country	Groundwater- Related Coastal Ecosystems	Ecosystem Services Status			
		Fishing	Agriculture	Water Purification	Cultural Services Education
Albania	Butrinti				
Algeria	Guerbes				
BiH	Hutovo Blato				
Egypt	Lake Mariut				
Lebanon	Tyre Beach				
Libya	Tawurgha Spring				
Montenegro/Albania	Skadarsko Lake				
	Tivatska Solila				
Morocco	Bou Areg Lagune				
	Estuaire Moulouya				
	Estuaire Oued Laou				
Tunisia	Cap Bon				

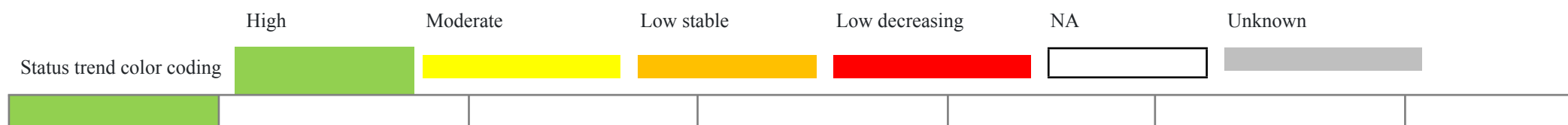


Figure 5 Status and trends of ecosystem services provided by Mediterranean groundwater-related wetlands (UN Environment/MAP and UNESCO-IHP, 2015)

Regional level policy findings and recommendations

The Barcelona Convention has been extended to address the coastal areas. The Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources (LBS) and Activities deals with groundwater as a land-based source point of pollution to the Mediterranean Sea, therefore covering a limited aspect of the management of coastal aquifers. The objective in this case is the protection of the sea (as indicated in the Protocol's title) and not the proper management of the coastal aquifers as an important source of water in the coastal zone. The Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean offers protection for areas such as coastal wetlands, which often in the coastal zone depend on coastal aquifers, but does not specifically reference coastal aquifers. The Protocol on Integrated Coastal Zone Management is the one dealing the most with water resources in the coastal zone and mentions coastal aquifers as such and specifies a monitoring requirement for the Parties. However even if this progress of the consideration of coastal aquifers is to be fully acknowledged, there are still gaps to be filled. In view of raising awareness about coastal aquifers at the regional level and integrating their specificities in coastal zones management strategies and plans, the following recommendations were formulated by the MedPartnership:

- Encourage the concerned countries to deposit their instruments of ratification, acceptance, approval or accession of/to the ICZM Protocol;
- Promote the uptake of the Integrative Methodological Framework (prepared and tested in the frame of the MedPartnership project by GWP-Med, UNESCO-IHP, PAP/RAC) and its consideration of coastal aquifers in the establishment of management plans;
- Implement the Sub-regional Action Plans for Mediterranean Coastal Aquifers and Wetlands (Adriatic, and South, Central and Levantine Basins) agreed upon by the countries as part of MedPartnership.

These recommendations are at the base of the design of the present project.

2B) BASELINE SCENARIO: PROJECT COUNTRIES

THE COASTAL ZONE OF ALBANIA

The Albanian coastline, with a length of 380 km, consists of sandy beaches for 70 % of its total, most of them facing the Adriatic Sea (Simeoni et al., 1997). The coastal zone has a relatively low degree of occupation and coastal structures of human origin appear only close to the main ports of Shengjini, Vlore and Saranda. Coastal wetlands are present along several lagoons which cover a large part of the coastal zone and have an important function for the economy of the country due to fishing, salt extraction and other activities. Despite the fact that some form of human intervention has taken place, the evolution of the Albanian coast in recent years has not suffered from the same degree of artificialization that has affected the coastline of many other Mediterranean countries. Tourism, especially in coastal areas, is an important sector in Albania's economy and is growing. In 2016, travel and tourism accounted for 26.0% of the Gross Domestic Product (GDP) and 23.9% of total employment, and these figures are anticipated to rise to 33.0% and 31.0%, respectively, by 2027 (World Travel & Tourism Council, 2017).

Coastal urbanization - The percentage of built-up area in Albania within the first 10 km from the coastline increased from 0.3% in 1975 to 3.7% in 2015 (UN Environment-GRID, 2017). In the first kilometer, this percentage was 0.5% in 1975, while in 2015 it was 5.8%. Within the distance of the first 150 meters from the coastline, the percentage of built-up areas in 1975 was 0.4%, while in 2015 it was 4%. Although these percentages of the built-up areas in coastal zones are rather low, Albania has increased its land-take between 1975 and 2015 by 956% in the first 10 km, by 1,164% in the first kilometer and by 842% in the first 150 meters from the coastline. These land-take values are the highest in comparison to those of the rest of Mediterranean countries.

Legal framework for the coastal zone - Albania ratified the ICZM Protocol in 2010 which is supported by a specific No. 10234 of 18.02.2010. The Law on Territorial Planning and Development of 2014 (Law 107/2014) harmonizes Albanian territorial planning and development with European environmental standards and norms. The same law requires the drafting of sectoral plans and detailed plans for areas of national importance. However, legislation supporting ICZM or the preparation of coastal plans is still a gap. Furthermore, the landward limit of the coastal zone has yet to be defined.

Setback - Article 84 of the 2012 law “On integrated Water Resources Management” establishes setback limits along the coast, rivers and water bodies of 100 meters and 200 meters for public use and free from developments as determined by the National Water Council.

Institutional framework for the coastal zone - The 2014 Law on Territorial Planning and Development defines responsible authorities at all levels for the territorial planning of the marine and land parts of the coast. Other regulatory duties are specified by statute. Institutions at national, local and sectoral level have a statutory role for the specific purposes of water resources management under the National Strategy for Development and Integration (NSDI II) of 2016 under the direction of the Prime Minister’s Office. However, institutional arrangements and programs for the integrated management of the coast are not specified.

Inter-ministerial coordination - The 2014 Law on Territorial Planning and Development and the NSDI II (2016) contain provisions for institutional coordination at national, regional and local levels. The provisions are in place for the coordinated implementation of ICZM for both terrestrial and marine parts of the coast. However, to date, implementation has been limited to regulatory actions at the local scale.

Planning and ICZM - There is currently no National Strategy for ICZM. A Coastal Zone Management Plan was developed in 1995 for the entire coastal area of Albania, and it introduced for the first time the implementation of Barcelona Convention Action Plans. However, this was not fully implemented and is now out of date. An ICZM study and plan for the southern coast of Albania was developed in 2005 and is currently under implementation. Integrated Cross-Sectional Plans for the Coast and for the Economic Zone Tirana-Durres were approved in 2016 with the ICZM methodology included. The existing strategies that include measures for management of coastal zones are: The National Strategy for

Development and Integration 2015-2020; the draft Cross-cutting Environmental Strategy 2015-2020 and the Document of Strategic Policies for Biodiversity Protection of 2016. These strategies, which seek to strengthen integrated policies, provide the basis for drafting a National Strategy for ICZM.

At the regional level, climate change adaptation plans for the Drini-Mati river deltas include ICZM measures, and the Buna/Bojana river basin coastal area was the subject of a transboundary Integrated Resources Management Plan (IRMP) developed under the MedPartnership (2015).

Monitoring - Article 85 of the Law 111/2012 on Integrated Management of Water Resources includes the monitoring of marine waters, surface waters, groundwaters and protected areas waters. The surface water monitoring program consists of monitoring of ecological, chemical, and microbiological parameters, as well as ecological potential and biodiversity status. According to Law No. 10 431, dated 9.6.2011 on Environmental Protection, the National Environmental Agency (NEA) is the competent authority for the management of the Environmental National Monitoring network. NEA carries out the monitoring of coastal waters on seasonal basis (four times per year) based on the analyses of physical, chemical and microbiological parameters. The Water Framework Directive is partially implemented, only for chemical monitoring. Nutrients are analyzed according to ISO 17025 and the NEA laboratory is accredited for the analyses of main chemical parameters. Monitoring of bathing waters has been carried out in Albania since 1991 (Water Quality Report, NEA, 2013) in the main beaches of Albania: Velipojë, Shëngjin, Durrës, Gjiri i Lalzit, Kavajë, Vlorë Dhërmi, Himarë, Borsh and Saranda. However, the monitoring system of coastal zone is very limited in Albania due to constraints of budget and staff time. Albania's capacity for environmental monitoring will be strengthened in the near term through its participation in the GEF project "Implementation of the Ecosystem Approach in the Adriatic Sea through Marine Spatial Planning" (the GEF Adriatic Project) which aims to align Albania's national monitoring program with the requirements of UN Environment/Mediterranean Action Plan (MAP)'s Integrated Monitoring and Assessment Program (IMAP).

Surface waters and related ecosystems - "Biodiversity-Albania" identifies the coastal lagoons or wetlands on the coast as the most significant ecosystems for the Albanian biodiversity and for their social and economic values. These ecosystems are especially important for migratory water birds. Two lagoon areas (Butrinti and Karavasta) are globally recognized Ramsar Convention wetland sites (Ramsar Sites) and are also designated as national parks. Two additional areas – Lake Shkodra and River Buna and the Prespa lakes - are also designated Ramsar Sites. The total surface area of Ramsar Sites in Albania is 98,181 hectares.

With the rapid and uncontrolled economic development over the last two decades, the quality of water resources has significantly deteriorated. The extraction of river gravel and the construction of hydropower plants have exerted great pressures on waters and riverbeds. Untreated municipal and industrial wastewater discharges are the main causes of water contamination, together with diffuse pollution of groundwaters and surface waters from nitrates and phosphates (due to excessive application of mineral fertilizers and animal manures, especially in highly erosion-prone soils).

There are three functioning municipal wastewater treatment plants in the cities of Kavaja, Pogradec and at the Rinas Airport. Municipal wastewater treatment plants have been completed in the coastal cities of Vlora, Durres, Lezha, Saranda as well as the inland city of Korca. The largest artificial reservoirs serve for hydroelectric power generation, i.e., reservoirs in a cascade above Drini, Mati and Bistrica. These reservoirs are essential to the Albanian economy. Other lakes are used for irrigation, more than 700 reservoirs with a total surface of 40 km².

Large quantities of solid or liquid waste from industries, and above all mining sites and large metallurgy plants, have been dumped on riverbanks or directly into rivers in the past decades. These plants are a legacy from the former central planning economic system, and several have ceased their operation or have been rehabilitated. Nevertheless, a number of them continue to generate immense pollution hazards.

Coastal aquifers and related ecosystems - Albanian coastal aquifers (Figure 6) are relatively small (less than 300 km²) and are characterized by Quaternary alluvial deposits (porous) and carbonate deposits (karstic). The largest aquifers are located in the deltas of the Buna/Bojana (Albania/Montenegro), Mati, Erzeni and Vjosa Rivers. The aquifers present in the Dukati and Pavlla river deltas are of a limited extent, but their thickness is considerable (the Dukati aquifer's mean thickness is between 40 m and 150 m).



Figure 6 Main coastal aquifers in Albania (UN Environment/MAP and UNESCO-IHP, 2015)

Albanian coastal aquifers are of utmost importance as they represent the only source of domestic water supplies in several urban settlements. For instance, the aquifers of Mati and Vjosa River plains ensure supplies of domestic water to populations of about 600,000 and 400,000 people, respectively.

Coastal aquifer recharge occurs through river water infiltration and precipitation. Groundwater has traditionally been used for drinking water and industrial activities, while surface water has typically been preferred for irrigation. The groundwater potential of Albania is estimated at 340 m³/s (70% of this from karstic aquifers). The mean rainfall is 1422 mm/yr, 70% of which occurs between the months of November and May.

The Buna/Bojana delta forms an extensive transboundary deltaic area of major ecological importance. The delta is among the most important natural or semi-natural wetlands in the Eastern Mediterranean and is characterized by a rich and diverse natural habitats featuring a variety of flora and fauna; a natural landscape of great value; and a unique cultural identity depicted in the landscape, historic monuments and societal practices.

The Ramsar-listed Lake Shkodra and River Buna (Albania) shared with Montenegro (Skadarsko Jezero Lake site) are recognized as groundwater-related ecosystems. An overview of the analysis of the main coastal aquifers in Albania undertaken for the MedPartnership is provided in Figure 7.

Aquifer name	Nutrients	Other Pollutants	Dependency for Domestic Uses	Links with Ecosystems	Salinization
Buna aquifer					
Cika aquifer					
Dukati aquifer					
Mati aquifer					
Tragjasi aquifer					
Vjosa aquifer					



Figure 7 Findings of the analysis of the main coastal aquifers in Albania undertaken in the MedPartnership (UN Environment/MAP and UNESCO-IHP, 2015)

Submarine groundwater discharges - The majority of karstic coastal aquifers (about 70%) discharge through submarine springs. The large karstic coastal aquifer of Vlore Bay (southwestern Albania) is unique in the world, as its submarine groundwater discharge (1.4 m³/s) is the main natural source of direct continental inflow in a mostly closed bay (Polemio et al., 2011). In this case, the modifications of the quality and quantity of the current coastal karstic groundwater discharge can provoke severe effects on the hydrological and ecological equilibrium of the sea and coastal areas (UNESCO, 2004). The quality of the groundwater in the Vlore Bay aquifer is generally high, due to a low degree of seawater intrusion (owing to favorable aquifer geometry and high recharge levels) and the near absence of contamination sources on the relief in which the aquifer outcrops. At the same time, the main flow paths were very rapid, which indirectly confirms the extreme vulnerability of these types of aquifers.

Policy and legal aspects of water management - Albania has undertaken efforts to transpose the fundamental principles, objectives and measures from the European Union (EU) Framework Directives to fully integrate the EU acquis into its national legislation on water resources management. A new Water Law was adopted in December 2012 and entered into force in December 2013. The new law fully complies with the provisions of the EU Water Framework Directive. An overview of the most relevant information concerning the policy and legal framework for water resources in Albania is set forth in Figure 8.

Water policies and strategies	
Main principles and objectives	<p>National Strategy for Development and Integration 2014-2020:</p> <ul style="list-style-type: none"> · Managing rivers by basin · Creating an electronic water cadaster · Integrated management of transboundary waters · Fully transposing the water-related EU acquis into national legislation · Establishing a data collection system for marine habitants, etc.
Consideration of groundwater and of coastal aquifers	None
Legal framework (Main principles & measures)	

Water ownership	<p>Law No. 111/2012, dated 15 December 2012, "On Integrated Management of Water Resources":</p> <ul style="list-style-type: none"> · All water resources are state property
Groundwater consideration	<p>Law No. 111/2012, dated 15 December 2012, "On Integrated Management of Water Resources" provides for protection of groundwater and the implementation of plans for improving its status</p> <p>Law No. 10431, dated 9 June 2011, 'On Environmental Protection" provides for water protection:</p> <ol style="list-style-type: none"> 1. Ensuring the prevention of damage to surface and groundwater quality 2. Improving the quality of surface waste waters waste and achieving water quality objectives 3. Rehabilitating contaminated groundwater 4. Improving the balance between the abstraction and the natural recharge of groundwater 5. Protection of aquatic flora and fauna <p>Law No. 8102, dated 28 March 1996 (amended with the law No. 9352, dated 3 March 2005; Law No.9584, dated 17 July 2006 and the Law No.9915, dated 12 May 2008), 'On sector regulatory framework for water supply and disposal, and the treatment of wastewater ':</p> <ul style="list-style-type: none"> · Establishes a regulatory framework for an independent regulatory authority responsible for water resources, water supply and disposal of wastewater processing, including surface water and groundwater resources <p>Law No. 9663, dated 18 December 2006, "On Concessions" regulates the procedures for granting concessions for use of natural resources, including water resources (surface water and groundwater) for hydropower; for the production, distribution and management of water for irrigation, drainage; and for the cleaning of canals and dams.</p>

Figure 8 Overview of policy and legal aspects of water management in Albania (UN Environment/MAP and UNESCO-IHP, 2015)

Synopsis of priorities and gaps - The regulatory, strategic and institutional frameworks for sustainable development, spatial planning and the integrated management of the coast, their water resources and ecosystems are broadly in place. Progress has been made in the preparation of strategies and plans, along with the innovative Integrated Resources Management Plan for the Buna/Bojana river basin coastal area. However, the weaknesses and gaps lie primarily in effective enforcement and implementation of coastal zone management. There are significant gaps relating also to institutional capacity. ICZM expertise and centers of specialization in coastal management are inadequate. Lack of legal institutional frameworks for groundwater governance in general, and coastal aquifers in particular, poses serious threats to environmental and socio-economic sustainability in large sections of the coastal zone.

The priorities identified include:

- Adopting a national ICZM Strategy and effective ICZM-specific legislation;
- Preparing ICZM plans that are coherent in geographic scope and that contain no significant gaps;
- Connecting and coordinating water use plans with the development activities in tourism;
- Coordinating and managing water uses in the context of climate change;
- Rehabilitating damaged riverbeds;
- Assessing coastal aquifers vulnerability and the evaluating seawater intrusion risk;
- Establishing a modern monitoring network to determine the factors negatively impacting groundwater quality and implementing effective pollution prevention measures;
- Raising awareness and building capacity for successful implementation and enforcement of coastal and water laws and policies; and

Enhancing mechanisms for gender-responsive decision-making in natural resources, as these (at the current baseline) are not equipped to address the needs of both men and women equally. As a general trend, women are unable to influence these mechanisms to preserve their interests, while facing disadvantages posed by civil society and socioeconomic structures.

Relevant UNDAF^[1] priorities – Albania has identified “Environment and Climate Change” as one of four priorities in its UNDAF 2017 – 2021, with an associated outcome for government and non-government actors to adopt and implement innovative, gender-sensitive national and local actions for environmental sustainability, climate change mitigation and adaptation, and disaster risk reduction. Child Project 2.1 will contribute to this priority in Albania’s UNDAF through activities to promote the sustainable development of the coast and its resources using ICZM instruments, and to enhance the protection and sustainable management of the country’s coastal groundwater resources and their related ecosystems. The project will also respond to Albania’s priorities by providing capacity building on climate change adaptation, marine spatial planning, collection of water data, the assessment of submarine groundwater discharges, and the conjunctive management of surface water and groundwater. Finally, gender has been mainstreamed in the activities of the project, including specific actions to promote gender equality and inclusivity.

[1] United Nations Development Assistance Framework (UNDAF)

THE COASTAL ZONE OF ALGERIA

Algeria has a coastline of 1,280 km characterized by a geomorphological diversity under the influence of the "Algerian current" which comes from the water entries of the Atlantic. Continental inputs of fresh water at some places are very important, according to the season. The Algerian coastline is subjected to pressures of anthropogenic origin due to the presence of several large coastal metropolises, including Algiers, Oran and Annaba. Tourism is mainly seaside and predominantly national. There is diffuse tourism on large parts of the coastline, although increasingly strong concentrations are recorded at some points of the coast.

Coastal urbanization - The percentage of built-up areas in Algeria within the first 10 km from the coastline increased from 1.4% in 1975 to 8.6% in 2015 (UN Environment-GRID, 2017). In the first kilometer, this percentage was 3.1% in 1975, while in 2015 it was 16.3%. Within the distance of the first 150 meters from the coastline, the percentage of built-up areas in 1975 was 3.4%, while in 2015 it was 14.0%. Algeria has increased its land-take between 1975 and 2015 by 517% in the first 10 km, by 422% in the first kilometer and by 315% in the first 150 meters from the coastline.

Legal framework for the coastal zone - Algeria has not yet ratified the ICZM Protocol. Nevertheless, Algeria prepared its National ICZM Strategy which was approved in 2015. Algeria has a specific law for the coastal zone: Law 02-02 relative to the protection and the valorization of the littoral (Littoral Law). It codifies the conditions and procedures for the construction and use of the land on the coastal strip, the use of the natural areas bordering the beaches and the extension of the non-buildable area.

Setback - The Planning and Urbanism Law sets forth special rules applicable to certain parts of the territory, particularly the coastline. This law defines a 100-meter-wide strip of land from the shore as a *non-aedificandi* easement, a "non-buildable area". However, the Law on the Protection and Development of the Coast states that it is possible, for reasons related to the sensitive nature of the coastal environment, to extend this area to a width of 300 meters. Nevertheless, because of the topographic constraints, regulations make exceptions for some activities requiring the immediate proximity of the sea. The Littoral Law limits the longitudinal extension of the urbanized perimeter of agglomerations located on the coast to three kilometers and recommends a distance of at least five kilometers between two adjacent agglomerations. It prohibits new carriageways parallel to the shoreline within 800 meters, on coastal dunes, coastal dune cords and the upper parts of beaches.

Institutional framework for the coastal zone - The National Coastal Commission (Commissariat du Littoral) is the main institution for the implementation of the Littoral Law. Its missions are to:

- Preserve and enhance the coastline, the coastal zone and the ecosystems they support;
- Protect the coastline and coastal areas by implementing the measures of applicable regulations;
- Assist local communities in all coastal-related matters under its responsibility;
- Maintain, restore and rehabilitate land and marine areas necessary for the maintenance of the natural balance, in view of their conservation;
- Promote awareness and programs of public information on the conservation and sustainable use of coastal areas and their biological diversity.

Ministries involved in the management of the coastal zone are the Ministry of the Interior of Local Authorities and Territorial Planning; the Ministry of National Defense; the Ministry of Public Works and Transportation; the Ministry of Agriculture, Rural Development and Fisheries; the Ministry of Housing, Urbanism and Town; the Ministry of Tourism and Art Craft; the Ministry of Water Resources; and the Ministry of Higher Education and Scientific Research.

Inter-ministerial coordination - An inter-ministerial committee was established for the elaboration of the ICZM National Strategy for Algeria. Algeria is currently establishing a National Commission responsible for the approval of coastal development projects and coastal plans.

Planning and ICZM - The enactment of the Littoral Law in 2002 and the elaboration of the National ICZM Strategy in 2015 provided a framework for the elaboration of plans, action plans and cooperation programs. Recently, Algeria has established the "National Environment and Coastal Fund" to finance the implementation of coastal and coastal protection measures.

Monitoring - The legal framework relating to the environment has been expanded in Algeria by a series of laws and other regulatory texts. Some of the resulting provisions relate to environmental monitoring (Law No. 03-10 of 19 July 2003 on the protection of the environment in the context of sustainable development; Law. 01-19 of 12 December 2001 on the management, control and disposal of waste; Law. 02-02 of February 5, 2002 (Littoral Law), Law. 01-11 of 3 July 2001 on fisheries and aquaculture; Executive Decree No. 06-141 of 19 April 2006 defining the limit values for discharges of industrial liquid effluents; Executive Decree No. 14-264 of 22 September 2014 on the organization of the combat against marine pollution and institution of emergency plans; Executive Decree no. 07-206 of 30 June 2007 on regional planning). National capacities for monitoring and analysis are well developed among national research centers, universities, national agencies and laboratories.

In Algeria, a number of initiatives related to monitoring the marine and coastal environment have been launched:

- Inventory of biological resources
- Centralization of Habitats and Ecosystems
- Signage of Invasive Alien Species
- Mapping, monitoring and monitoring plants in *Posidonia oceanica* meadows in Algeria
- Health and Classification Study of Fishing and Aquaculture Zones
- National Network for the Analysis of the Quality of Aquatic Environments

Finally, a geographical information system to monitor the state of the coastline of the 14 coastal Wilayas was recently launched and will consolidate data generated from past, ongoing and future projects.

Surface water and related ecosystems - The only major river in Algeria flowing into the Mediterranean is the Cheliff (725 km long), which has its source in the Tell Atlas. The country has 1,451 wetlands in its territory, distributed from north to south over three million hectares, more than 1% of the country's surface. There are currently 50 Ramsar Sites in Algeria, with a total area of 2,991,013 hectares.

The availability of conventional water resources is affected by growing water demands and the deterioration of surface and groundwater quality. Moreover, climate change is further exacerbating the situation with significant impacts on weather patterns, precipitation, and the hydrological cycle, affecting surface water availability, as well as soil moisture and groundwater recharge. The climate change and dryness which occurred for several decades in Algeria have negatively affected the water resources of the country. The current situation is characterized by imbalance between the needs and the available resources. Pollution of water resources by domestic, agricultural, and industrial wastes exceeds by far the processing capacities of the available treatment systems. In April 2011, 123 sewage treatment plants were operating in the country. During that same year, the national wastewater treatment capacity was of 365 Mm³/yr, compared to a volume of discharged wastewater of 1062 Mm³ /yr. The Mediterranean Hot Spots Investment Programme (MEHSIP) (2008) identified considerable pollution problems in Algeria's coastal zone (a coastal band with a width of 40 km) representing 1.8% of the country's surface and hosting approximately 12.5 million people (1998) or 45% of the country's population. Most urban effluents are discharged untreated directly into the sea. Industrial activity is also concentrated in the coastal zone and industrial effluents are discharged into the coastal marine environment. Furthermore, petroleum hydrocarbon pollution is very common along the Algerian coastline due to the maritime oil traffic lines passing close to the Algerian coast.

Coastal aquifers and related ecosystems - Algeria's 59 coastal aquifers (Figure 9) are characterized mainly by sand, sandy clay and gritty clay formations, and in most cases, they are in relation with a surface water body. In an average year, these coastal aquifers provide 914.5 Hm³/yr in exploitable water resources. Agriculture accounts for the dominant use of the coastal aquifers studied, with domestic and industrial activities as secondary uses. Coastal aquifers sustain several important ecosystems, including the El Mohken wetland (Plaine de Collo), and the Ramsar Sites of Lake Tonga and Lake Oubeira (Plaine d'Annaba) and also Reghaia Lake (Plaine Alluviale de La Mitidja). Average annual rainfall ranges from 400 mm in the west to more than 1200 mm in the east, with less than 100 mm near the edge of the Sahara. Algeria is considered a water-scarce country.

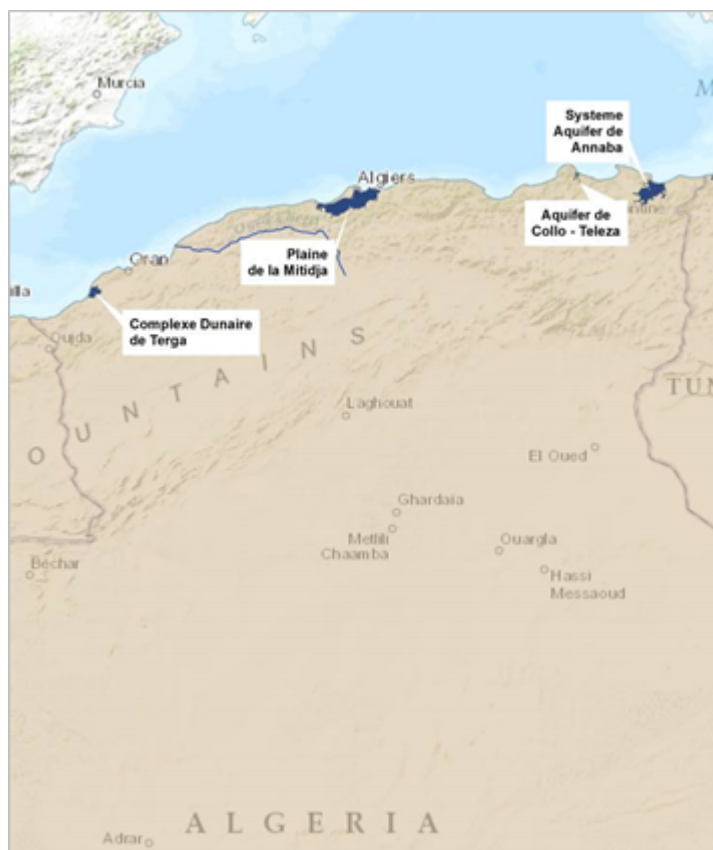


Figure 9 Main coastal aquifers in Algeria (UN Environment/MAP and UNESCO-IHP, 2015)

An overview of the analysis of the main coastal aquifers in Algeria undertaken for the MedPartnership is provided in Figure 10.

Aquifer name	Nutrients	Other Pollutants	Dependency for Domestic Uses	Links with Ecosystems	Salinization
Aquifère de Collo - Teleza					
Complexe Dunaire de Terga					

Plaine de la Mitidja					
Système Aquifère de Annaba					



Figure 10 Findings of the analysis of the main coastal aquifers in algeria undertaken in the Medpartnership (UN Environment/MAP and UNESCO-IHP, 2015)

Submarine groundwater discharges - No official estimates of submarine groundwater discharges from Algeria's coastal aquifer are available.

Policy and legal aspects of water management - The legal framework for the management of aquifers in Algeria seems rather complete, with a water law (Law No. 05-12 - 2005, amended and supplemented by Law No. 08-03 – 2008) including various provisions related to groundwater as well as implementation decrees on this issue. A National Water Plan (NWP) is prepared every five years. The Minister of Water Resources presents it to the Council of Ministers for approval, then it is adopted by Decree. Master Plans for Water Resources Management (PDARE) are prepared on the basis of the NWP at the level of each watershed. Besides the central administration composed of the Ministry of water resources and other ministries in charge also in the water sector, the institutional frame is composed of many national public establishments under the umbrella of the Ministry of water resources, including watershed agencies (ABH). Other national agencies are also in charge of water from different perspectives. The "National Advisory Council on Water Resources" is also established as a consultative body to examine strategic options and implementation instruments of the NWP as well as all issues relating to water for which its opinion is requested (Article 62). An overview of the most relevant information concerning the policy and legal framework for water resources in Algeria is set forth in Figure 11.

National policy and strategy for water

Principles and objectives	<p>The main principles of the water policy are:</p> <ol style="list-style-type: none"> 1. Saving water through controlling leakage and water waste 2. Creating awareness about the rational utilization of water 3. Protecting water from all pollution 4. Universality: water is the business of all users 5. Research and evaluation of surface water and groundwater resources <p>It aims to:</p> <ul style="list-style-type: none"> · Increase the mobilization of the resource · Rehabilitate and develop the infrastructures (drinking water and sanitation) · Modernize and extend the irrigated surfaces to support the strategy for food security · Ensure good water governance and improve management indicators
Consideration of groundwater and coastal aquifers	None
Legal framework (main principles and provisions)	
Water ownership	Water belongs to the public domain (Water law no. 05-12, 4 August 2005)
Consideration of groundwater	<p>Law no. 05-12</p> <p>Executive decree no. 10-23 of 2010 on the quantitative protection of groundwater</p> <p>Executive decree no. 10-25 of 2010, establishing the granting modalities of a concession for establishing water pumping installations (surface and groundwater) in view of ensuring an autonomous supply of industrial zones or units.</p> <p>Executive decree no. 10-317 of 2010 defining the conditions for the samples and the analyses of ground and surface water resources.</p> <p>Executive decree no. 10-318 of 2010 defining the granting modalities for concessions for using water resources from fossil or slowly renewable aquifer systems</p> <p>Executive decree no. 11-219 of 2011 defining the quality objectives of surface and groundwater for drinking purposes.</p>

Consideration of coastal aquifers	None
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Figure 11 Overview of policy and legal aspects of water management in Algeria (UN Environment/MAP and UNESCO-IHP, 2015)

Synopsis of priorities and gaps - The coastal zone experiences intense pressure from human populations (281 inhabitants/km²) as well as industrial activities (51% of the country's industrial plants are located along the coast) and a growing tourism industry (9 million visitors in 2005). Rising sea levels have been observed, increasing the vulnerability of coastal aquifers to seawater intrusion. Lack of legal institutional frameworks for groundwater governance in general, and coastal aquifers in particular, poses serious threats to environmental and socio-economic sustainability in large sections of the coastal zone. Furthermore, solid waste management practices have a negative impact on the coastal zone, with 380 uncontrolled disposal sites along the coast.

The identified priorities include:

- Consolidating the institutional framework, improving its effectiveness and strengthening governance;
- Raising awareness and improving environmental communication by involving civil society to build ownership for the protection and sustainable development's measures for the coastal zones;
- Supporting the creation of a national monitoring system for coastal areas;
- Exchanging of ICZM best practices;
- Building capacity and adaptation of the education curricula according to the needs of ICZM;
- Integrating risks related to climate change in coastal zone planning;
- Optimizing the framework of international and regional cooperation in order to support national policy for preservation and protection of the coastal zone;
- Securing support for the activities of Non-Governmental Organizations (NGOs) for the protection of environment in coastal zones; and
- Identifying measures to address the challenges associated with the scarcity of water resources, but also the fragility of soils (erosion) and ecosystems, key issues identified in the National Water Plan

Relevant UNDAF priorities – The environment and climate change figure prominently in Algeria's UNDAF 2016 – 2020, which documents the country's goal to achieve by 2020 an improved quality of life and increased resilience of its institutions and citizens, through participatory management of natural and urban ecosystems. Child Project 2.1 will support Algeria in its achievement of this goal by promoting the uptake of ICZM instruments – proven tools for enhancing sustainable development of the coast and its resources and building the resilience of people and institutions – and by providing capacity building on climate change adaptation, marine spatial planning, collection of water data, the assessment of submarine groundwater discharges, and the conjunctive management of surface water and groundwater. Finally, gender has been mainstreamed in the activities of the project, including specific actions to promote gender equality and inclusivity.

THE COASTAL ZONE OF BOSNIA AND HERZEGOVINA

The State of Bosnia and Herzegovina (BiH) consists of two entities: the Federation of Bosnia and Herzegovina (FBiH) and the Republic of Srpska (RS). The Breko District of Bosnia and Herzegovina (BDBiH) has been created under the exclusive sovereignty of the Bosnia and Herzegovina. BiH has 20 km of Adriatic coastline, located in an area known as the Neum corridor. The morphology of the coastline is mainly characterized by steep hills and a rocky coast with some sandy beaches. Tourism in the Neum corridor is concentrated mostly in the coastal region and is the leading contributor to the local economy.

Coastal urbanization - BiH has limited access to the Adriatic Sea through the 20-km wide Neum corridor. The percentage of built-up area in BiH within the first 10 km from the coastline increased from 0.2% in 1975 to 0.6% in 2015 (UN Environment-GRID, 2017). In the first kilometer, this percentage was 2.4 % in 1975, while in 2015 it was 8.1%. Within the distance of the first 150 meters from the coastline, the percentage of built-up land in 1975 was 2.9 %, while in 2015 it was 10.5%. BiH has increased its initial land-take between 1975 and 2015 by 239% in the first 10 km, by 239% in the first kilometer and by 264%, in the first 150 meters from the coastline.

Legal framework for the coastal zone - BiH has not ratified the ICZM Protocol. No specific coastal legislation has been formulated or agreed. Legislation relevant to the coast is sectoral, including the Water Law of the FBiH, Water Management Plan for the Adriatic Sea in the FBiH, the Law on Environmental Protection; or is covered by the general regulatory duties of government bodies such as the Ministry of Agriculture, Water Management and Forestry.

Setback - No coastal setback zone has been defined.

Institutional framework for the coastal zone - The Adriatic Sea River Basin District Agency has statutory responsibility for water quality, monitoring and water management plans. Other sectors are the responsibilities of the relevant ministries of Agriculture, Transport & Communications, Environment & Tourism, Health, cantons and municipalities.

Inter-ministerial coordination - No formal mechanisms for inter-ministerial coordination have been identified.

Planning and ICZM - BiH has adopted its National Action Plan (NAP) to reduce pollution caused by land-based activities (2017), fulfilling its obligations under the LBS Protocol of the Barcelona Convention and creating conditions for financial support of future projects in this domain. BiH has various bilateral arrangements and cooperation with the Republic of Croatia, including the planning of water management relations on the protection and use of transboundary watercourses and international lakes; the agreement on joint financing of

maintenance and operation of the regional drainage system; the Cooperation in Protection from Natural and Civil Disasters (2001); the GEF Adriatic Sea Environmental Pollution Control Project, etc. A spatial plan for the coastal municipality of Neum has been prepared but not adopted by the federal authority. There are no specialized research centers to further the knowledge of integrated coastal zone management or river basin management.

Monitoring - BiH's national monitoring programme is focused on the physicochemical parameters of sea water, and on contaminants, including in pollution hot spots. Although BiH is not one of the countries that will participate in the GEF Adriatic project (these are Albania and Montenegro), it will have the opportunity to exchange best practices on environmental monitoring with these countries. Furthermore, BiH will receive technical assistance in this domain from the Marine Pollution Assessment and Control Component of MAP (MED POL) to support the alignment of its national monitoring programme with IMAP, and from the Priority Actions Programme/Regional Activity Centre (PAP/RAC) through the preparation of a Coastal Area Management Programme (CAMP).

Surface waters and related ecosystems - The waters of BiH are split between the Danube River Basin District and the Adriatic Sea Basin. The Adriatic Basin covers parts on the BiH territory of the international river basins of the Neretva River, Trebišnjica, Cetina and Krka. As a result of its rich natural environment, low industrial development and relatively low anthropogenic impact, Bosnia and Herzegovina has a high level of biodiversity compared to the European average. BiH has three Ramsar Sites: Hutovo Blato, Bardača and Livanjsko polje. Hutovo Blato, a coastal ecosystem, was declared a natural park in 1995. Due to its significance for migration of large number of wetland birds, it was also listed as one of the Specially Protected Areas of Mediterranean Importance in accordance with the Barcelona Convention. The International Council for Bird Protection furthermore included Hutovo Blato on the list of internationally recognized areas of importance for birds (1998).

Overall, the water quality of the rivers of BiH is good with respect to levels of nitrates and dissolved oxygen. However, rivers located in regions with industrial installations have been observed to have high nitrate concentrations, for example the Spreča River (area around the Sava River) and the Bosna River, which is the most vulnerable to urban and industrial wastewater discharge. Inadequate treatment of wastewater is another important source of water pollution. Only some municipalities in the Adriatic Sea Basin (Trebinje and Bileća) have functioning facilities for sewage water treatment. Some progress was made in the period 2003-2009 during which the quantity of water treated annually increased with respect to total wastewater generated.

Coastal aquifers and related ecosystems - BiH has one coastal aquifer (Figure 12), the Trebišnjica aquifer, which extends into the territory of Croatia. The Trebišnjica aquifer is primarily karstic, formed in very fractured and porous limestone. The recharge of this aquifer occurs mainly through infiltration of precipitation and from sinking rivers, with infiltration rates especially high in the spring resulting from increased river flow due to melting snow. Average rainfall is approximately 1,780 mm/yr, with elevated precipitation occurring in fall and spring. Surface and groundwater regimes were altered drastically with the construction of several important dams and reservoirs during the era of the former Yugoslavia. The independent states that emerged from the former Yugoslavia are now faced with complex, transboundary water management challenges resulting from these constructed systems. These challenges have presented cooperation opportunities as evidenced in the development of joint water monitoring programs between countries in the region (i.e., Serbia, Montenegro and Croatia). An overview of the analysis of the main coastal aquifer in BiH undertaken for the MedPartnership is provided in Figure 13 in.



Figure 12 Main coastal aquifer in BiH (UN Environment/MAP and UNESCO-IHP, 2015)

Aquifer name	Nutrients	Other Pollutants	Dependency for Domestic Uses	Links with Ecosystems	Salinization
Trebišnjica					



Figure 13 Findings of the analysis of the main coastal aquifer in BiH undertaken in the MedPartnership (UN Environment/MAP and UNESCO-IHP, 2015)

Submarine groundwater discharges - No official estimates of submarine groundwater discharges from BiH's coastal aquifer are available.

Policy and legal aspects of water management - There is no legally binding act related to water at the state level, with the exception of the Rulebook on Health Safety of Drinking Water. In BiH, water management issues are not addressed in the Constitution so they fall under the following provision: “All governmental functions and powers not expressly assigned in this Constitution to the institutions of Bosnia and Herzegovina shall be those of the Entities” (Article III, Paragraph 3 of the Constitution of BiH). Therefore, water management issues are of the competence of the Entities, meaning FBiH and RS. The FBiH is subdivided in ten Cantons, which makes the water governance even more complex in this part of BiH. Each Canton has its own government and adopts its own laws (in accordance and fully complying with the FBiH legislation). The main functions and tasks related to water assigned to the Cantons include permitting and allocation of water resources under their competence (drainage, irrigation, water supply, hydropower, and water protection). An overview of the most relevant information concerning the policy and legal framework for water resources in BiH is set forth in Figure 14.

Water policies and strategies

Main principles and objectives	<p>The Development Strategy of FBiH (2010-2020) identifies water and groundwater as development factors:</p> <ul style="list-style-type: none"> · Strategic goals of the strategy: · Legal and institutional reform of the water sector, · Integrating water management into the economic system, · Safeguarding the good status of surface and groundwater · Harmonization with EU acquis <p>Water Management Strategy (FBiH) (2011) for the period 2010-2022 includes strategic objectives related to groundwater:</p> <ul style="list-style-type: none"> · Strategic objective no. 1: legal reform of the water sector and alignment with the European union water acquis; · Strategic objective no. 8: achieving and maintaining good status of surface water and groundwater to protect of aquatic flora and fauna, and needs of water users <p>Framework Plan of Development of Water Management (2006) of RS refers to groundwater in a number of objectives:</p> <ul style="list-style-type: none"> · Ensuring the implementation of the EU Water Framework Directive · Defining limits of substances for surface and groundwater in protected areas · Program establishing monitoring of nitrates in surface water and groundwater · Adopting measures for preventing water contamination and protection in case of outflow in groundwater and surface water. <p>Strategy of Integral water management of RS for the period 2014 – 2024; this is a draft version. Adopted on the basis of the Framework Plan. Special emphasis on waste water treatment plants.</p>
Consideration of groundwater	<p>In all strategic and planning documents</p>
Legal framework (Main principles and measures)	

Water ownership	FBiH: <ul style="list-style-type: none"> · Category I waters: FBiH is the owner · Category II waters: the city or the municipality is the owner unless regulated otherwise by the Cantonal regulations
Groundwater consideration	FBiH: <ul style="list-style-type: none"> · Water Law (2006) · RS: · Water Law (2006, amended in 2009) · BDBiH: · Water Law (2004, amended in 2005 and 2007)
Coastal aquifers consideration	None

Figure 14 Overview of policy and legal aspects of water management in BiH

Synopsis of priorities and gaps - BiH has yet to ratify the ICZM Protocol and has no legal instrument for setback or for integrated management. Legislative, planning and management measures to ensure the protection and conservation of coastal areas and marine areas are not in place. Lack of legal institutional frameworks for groundwater governance in general, and coastal aquifers in particular, poses serious threats to environmental and socio-economic sustainability in large sections of the coastal zone. Gender mainstreaming is implied but not specifically emphasized.

The identified priorities include:

- Ratifying and adopting the ICZM Protocol;
- Preparing a national ICZM strategy or equivalent plan for the coast of BiH, and transboundary cooperation;
- Strengthening mechanisms for institutional cooperation on the coast;
- Strengthening institutional capacity regarding ICZM expertise and centers of specialization in coastal management;
- Raising awareness and building capacity for successful implementation and enforcement of coastal and water laws and policies; and
- Developing formal mechanisms to provide women with enhanced opportunities to participate in decisions regarding natural resources management.

Relevant UNDAF priorities – Sustainable and equitable development and employment are highlighted as priorities in Bosnia and Herzegovina's UNDAF 2013 – 2019. Two of the associated desired outcomes of these priorities are: (1) the enhancement and operationalization of legal and strategic frameworks to ensure sustainable management of natural, cultural and energy resources; and (2) better articulated and coordinated policies and programmes, including those focused on science. Child Project 2.1 will respond directly to the first outcome by promoting the uptake of the ICZM Protocol and related instruments which are recognized as effective tools for the sustainable development of the coast and its resources. The project will also support the second outcome by enhancing policies and programmes underpinned by science through the building of institutional capacity on climate change adaptation, marine spatial planning, collection of water data, the assessment of submarine groundwater discharges, and the conjunctive management of surface water and groundwater. Finally, gender has been mainstreamed in the activities of the project, including specific actions to promote gender equality and inclusivity.

THE COASTAL ZONE OF EGYPT[1]

Egypt has a coastline of about 1,150 km and is among the most populated countries of the Mediterranean region. It has a high population density in the Nile Delta zone and on the Mediterranean coast, due to the presence of important coastal cities such as Alexandria (about 4.4 million inhabitants), Port Said (630,000 inhabitants) and Marsa Matrouh (400,000 inhabitants). The anthropogenic pressure on the marine environment along the Mediterranean coast of Egypt is linked to urban development and land reclamation for agriculture and aquaculture. In addition to urban development, the Mediterranean coast of Egypt hosts 40% of the industrial activity of the country and some portions of this coast are used for domestic tourism. The coastal zone between Alexandria and Marsa Matrouh is an important area for tourism, which generates additional pressure on the marine environment from the discharge of wastewater and solid wastes.

Coastal urbanization - The percentage of built-up area in Egypt within the first 10 km from the coastline increased from 1.1% in 1975 to 6.7% in 2015 (UN Environment-GRID, 2017). In the first kilometer, this percentage was 3.0 % in 1975 while in 2015 it was 12.7%. Within the distance of the first 150 meters from the coastline, the percentage of built-up land in 1975 was 0.6%, while in 2015 it was 5.6%. Egypt increased its initial land-take between 1975 and 2015 by 487% in the first 10 km, by 321% in the first kilometer and by 783%, in the first 150 meters from the coastline.

Legal framework for the coastal zone - Egypt has yet to ratify the ICZM Protocol. However, a legal instrument from 1994 (amended in 2009) requires the preparation of an ICZM Strategy to comply with the Protocol, as well as environmental management of the coast zone based on the participation of all relevant parties, and the management of coastal resources to achieve sustainable development. Furthermore, the landward extent of the coastal zone is defined according to criteria ranging from 30 km in desert areas to the 3-meter contour in the Nile Delta. Governorates can set the boundary, but never less than 10 km landward.

Setback - The legislation referred to in the previous section also prohibits construction within 200 meters of the coast without permission from the administrative authority and the High Supreme Licensing Committee.

Institutional framework for the coastal zone - The Ministry of Planning has prepared the National Strategy for Sustainable Development. The Minister of Environment oversees the National Steering Committee for ICZM. Egypt has a number of centers with ICZM expertise and responsibilities, including the Egyptian Environmental Affairs Agency Department for ICZM.

Inter-ministerial coordination - The National Steering Committee for ICZM is comprised of all 16 ministers responsible for the protection and management of the coastal zone, along with NGOs, the private sector and experts. The High Supreme Licensing Committee for development comprises relevant line ministries and stakeholders.

Planning and ICZM - A draft national ICZM strategy was initiated in 2008 by the Egyptian Environmental Affairs Agency with the support of PAP/RAC. ICZM projects undertaken include those in the coastal areas of Matrouh and Sallum, Alexandria, Alexandria Lake Maryut, and the Fuka Matrouh CAMP project. The latter includes measures to facilitate women's involvement in the coastal planning process. In addition, the GEF-UNDP project "Adaptation to Climate Change in the Nile Delta Through Integrated Coastal Zone Management" 2009-2014 was developed on ICZM principles. Contingency action plans and strategies have been developed for tsunami risks, environmental disasters and oil spills. Egypt has prepared a Strategic Plan for Biodiversity to support the implementation of the CBD (2011-2020). Recently the project "Enhancing climate change adaptation in the North coast and Nile Delta Regions in Egypt" has been approved by the Green Climate Fund (GCF). Initial contacts with the implementing agencies in Egypt have been established to avoid overlapping and to promote synergies with Child Project 2.1 of the MedProgramme.

Monitoring - Obligations for monitoring are set forth in two laws: Law Number 4 of 1994 promulgating the Environment Law and Law Number 102 of 1983 for Nature Protectorates. There exists, therefore, national capacities for monitoring and analysis among national institutions and organizations. Most of the scientific monitoring initiatives undertaken to date have been within the framework of projects or academic studies covering specific sites and limited time periods. Some of these include:

- Environmental Information and Monitoring Program;
- National monitoring program for Mediterranean water from Salloum to Rafah (the most important monitoring program for the Mediterranean waters of Egypt);
- Monitoring of Important Birds Area of Egypt.

Coastal aquifers and related ecosystems - Human populations in Egypt's Mediterranean coastal area (Figure 15), rely heavily on groundwater found in three main coastal aquifer systems covering nearly 18,000 km². These main coastal aquifers are all porous in nature, varying from oolitic limestone to sandy gravel formations, in confined and semi-confined states. Agriculture accounts for the main use of these coastal aquifers, with important quantities of groundwater also extracted for domestic uses including drinking water. The average rainfall in the Mediterranean coastal zone of Egypt varies from 130 to 170 mm/yr. Egypt suffers from acute water shortage. Coastal aquifers support important ecosystems including those at Lake Burulus, Lake Bardawil, Lake Maryut, Lake Manzala and some salt flats. An overview of the analysis of the main coastal aquifers in Egypt undertaken for the MedPartnership is provided in Figure 16.

[1] The government of Egypt will provide some updated baseline information during the inception phase of the project.



Figure 15 Main coastal aquifers in Egypt (UN Environment/MAP and UNESCO-IHP, 2015)

Aquifer name	Nutrients	Other Pollutants	Dependency for Domestic Uses	Links with Ecosystems	Salinization
North Nile Delta coastal aquifer					
North Sinai coastal aquifer					
North West coast					



Figure 16 Findings of the analysis of the main coastal aquifers in Egypt undertaken in the MedPartnership (UN Environment/MAP and UNESCO-IHP, 2015)

Submarine groundwater discharges - Groundwater discharges from Egypt's coastal aquifers to the Mediterranean are negligible.

Policy and legal aspects of water management - The legal framework in Egypt for water management is composed of two laws (Law 12/1984 on irrigation and drainage, and Law 213/1984 modifying some items of the previous law) which address primarily irrigation, the dominant water use sector. A law for groundwater was drafted in 2010 but has not been adopted yet. At the institutional level, the water sector is dominated by the Ministry of Water Resources and Irrigation, which is composed of two major departments and four main authorities. An overview of the most relevant information concerning the policy and legal framework for water resources in Egypt is set forth in Figure 17.

Water policies and strategies

Main principles and objectives	<p>The national water policy (until 2017) rests on three major pillars:</p> <ol style="list-style-type: none"> 1. Increasing water use efficiency 2. Water quality protection 3. Pollution control and water supply augmentation <p>The National Water Resources Plan Project developed water resources management and investment plans, including for groundwater resources. Its implementation depends on:</p> <ol style="list-style-type: none"> 1. Development of additional water resources; 2. More efficient use of the available water resources; 3. Improvement of water quality to protect public health and the environment. <p>The Strategy of water resources development and management in Egypt until 2050 considers major issues of concern such as scarcity of water, pollution control, securing water quality and water saving, industrial and agricultural waste disposal, protection of groundwater resources, and environmental problems of climate change. Groundwater management is one of the key issues in this strategy.</p>
Consideration of groundwater and of coastal aquifers	Strategy of water resources development and management
Legal framework (main principles and measures)	
Water ownership	No information available
Groundwater consideration	Groundwater is recognized in Law No. 48/1982 (Article 1-C) and its supplementary Decree 8/1983 (Article 1-11) as one of the categories of the water bodies in the country
Coastal aquifers consideration	None

Figure 17 Overview of policy and legal aspects of water management in Egypt (UN Environment/MAP and UNESCO-IHP, 2015)

Synopsis of priorities and gaps - The regulatory, strategic and institutional frameworks for sustainable development, spatial planning and the integrated management of the coast are well developed with clear mechanisms for institutional coordination. The landward limits of the coast are well defined and pre-date the ICZM Protocol. Institutional and scientific capacity is well developed at the national level. The necessary pre-conditions are therefore mostly in place to deliver ICZM. However, the key weakness and gaps lie primarily in the lack of an up-to-date, approved national ICZM Strategy, and on-the-ground implementation and integration with water and aquifer management. The main concerns are the growing seawater intrusion into coastal aquifers from over-exploitation of groundwater for agriculture and domestic purposes (increasing demands and also inefficient irrigation and distribution systems), water logging of irrigated areas expected to exacerbate soil salinization, and pollution from leaching of sewage from unlined septic tanks. Lack of legal institutional frameworks for groundwater governance in general, and coastal aquifers in particular, poses serious threats to environmental and socio-economic sustainability in large sections of the coastal zone.

The priorities identified include[1]:

- Ratifying the ICZM Protocol;
- Updating national legislation where necessary to fully transpose the ICZM Protocol into the national legal framework;
- Updating the National ICZM Strategy, in particular to integrate the better understanding of potential climate change impacts and its adoption;
- Preparing regional/local ICZM and coastal aquifers plans and their implementation;
- Raising awareness and building capacity for successful implementation and enforcement of coastal and water laws and policies; and
- Improving mechanisms for women's participation in integrated coastal management.

Relevant UNDAF priorities – In its UNDAF 2013 – 2017, Egypt has placed emphasis on environmental sustainability and natural resources management, with an outcome dedicated to the strengthening of mechanisms for the sustainable management of natural resources such as land, water and ecosystems. Child Project 2.1 will assist Egypt in achieving this outcome through activities to promote the sustainable development of the coast and its resources using ICZM instruments, and to enhance the protection and sustainable management of the country's coastal groundwater resources and their related ecosystems. The project will also respond to Egypt's priorities by providing capacity building on strategies for adapting to climate change and increasing coastal resilience, the collection of water data, and approaches for the conjunctive management of surface water and groundwater. Finally, gender has been mainstreamed in the activities of the project, including specific actions to promote gender equality and inclusivity.

THE COASTAL ZONE OF LEBANON

Lebanon has about 220 km of coastline, which is largely made up of sedimentary rocks, loose sands or gravel. Much of the sandy coast has been degraded by the illegal extraction of sand, which has only been brought under control since 1990. In terms of marine biodiversity, the Lebanese coast is characterized by the presence of *organogenic* platforms consisting of *vermetid* terraces, considered as natural monuments in the Mediterranean.

Coastal urbanization - The percentage of built-up area in Lebanon within the first 10 km from the coastline increased from 9.9% in 1975 to 21.6% in 2015 (UN Environment-GRID, 2017). In the first kilometer, this percentage was 24.2% in 1975, while in 2015 it was 46.1%. Within the distance of the first 150 meters from the coastline, the percentage of built-up land in 1975 was 14.2%, while in 2015 it was 38.3%. For both years, these represent the highest percentages of the built-up coastal zone in comparison to the rest of Mediterranean countries. Lebanon has increased its initial land-take between 1975 and 2015 by 118% in the first 10 km, by 90% in the first kilometer and by 170%, in the first 150 meters from the coastline.

Legal framework for the coastal zone - Lebanon ratified the ICZM Protocol in 2017, and the draft law for its implementation is currently under consideration for approval by the Council of Ministers. The National Physical Master Plan of the Lebanese Territory 2005 on Coastal Zone Assets and the urban planning laws are in place to limit linear urban expansion and protect open areas. Master plans are in place for some coastal areas.

Setback – According to the draft law, construction is forbidden within a 200-meter zone from the highest sea level in winter; while free public access to the beach and public maritime domains are allowed under the decree 4810/1966. However, this decree has been weakened by illegal developments, subsequent exemptions and a lack of enforcement.

Institutional framework for coastal zone - A national committee coordinated and convened by the Council of Ministers is responsible for sustainable development. In addition, there is a Climate Change Coordinating Committee, led by the Ministry of Environment with focal points in the line ministries, government agencies, private sector and academic institutions. The coordination and the supervision of the management of the coastal area were attributed to the National Council of Environment in 2002. Individual ministries retain their specific mandates for the regulatory control of relevant activities on the coast.

Inter-ministerial coordination - While communication and coordination relating to coastal zone management between government institutions is not currently considered comprehensive or unified, the issuing of permits in the coastal zone and the implementation of CZM projects is coordinated within the government. The coordination of activities on maritime policy is being enhanced through the establishment of a national committee for Integrated Maritime Policies under the Ministry of Public Works.

Planning and ICZM - Although there is no national strategy for ICZM, a significant amount of preliminary work is underway or has been completed in recent years, including:

- The "Integrated Management of East Mediterranean Coastlines" (IMAC) project to develop a regional strategy for North Lebanon coast. The strategy developed by the CAMP Project at the Ministry of Environment emphasizes the adoption and application of ICZM principles to achieve the sustainable development of the Lebanese coast. This has potential for national application.
- The project "Environmental Resources Monitoring in Lebanon" (2011-2013) (UNEP and UNDP), which includes monitoring and identifying sensitive biological, cultural and socio-economic priorities for the coastal zone, along with a legal overview related to the coastal zone.
- The project "Supporting the management of important marine habitats and species in Lebanon" (2010-2012) with the objective to build Lebanon's Marine Protected Areas Strategy with the support of the International Union for Conservation of Nature (IUCN).

Monitoring - The legal requirements for environmental monitoring in Lebanon are set forth in the following regulations: The Law on the Environment (Law 444/2002) of 29/07/2002; Decree 8213 of 24/05/2012 relating to the Strategic Environmental Assessment; and Decree 8633 of 16/08/2012 on Environmental Impact Assessments. There are therefore organizations with the capacity to carry out monitoring activities, including universities, national institutions, the National Council for Scientific Research, the National Marine Science Center, and NGOs.

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Lebanon's National Marine Science Center has been monitoring the marine and coastal environment for thirty years through a network of about thirty stations along the Lebanese coast measuring physical, chemical and bacteriological parameters. Ongoing monitoring programs include the following:

- Lebanese coastal waters observation network (permanent surveillance);
- Monitoring of oil contamination on the environment of the Lebanese Sea;
- Monitoring cetaceans in Lebanese waters;
- Assessment of stocks of species of interest for fishing.

Surface water and related ecosystems - The net available surface water is estimated at about 2,700 Mm³ per year (estimates from the 1960s and 1970s). Most of the surface water used for supply comes from captured spring sources. Their total yearly yield exceeds 1,200 million m³ (but less than 200 million m³ during the summer period). The total annual exploited volume is 637 million m³. Lebanon also has a number of freshwater marine springs. Sixteen perennial rivers and 23 seasonal rivers exist in the country, with a total annual river flow of about 3,900 Mm³, of which an estimated 700 Mm³ flow into neighboring countries. Rivers and streams are among the sites protected by decisions from the relevant authorities. Permitting standards are given for the construction and operation of facilities within a 500-meter protection radius (buffer zone). Other conservation legislation derives from international conventions including the 1971 Ramsar Convention. The most significant wetland in Lebanon is located in Ammiq, just north of the Qaroun Lake, and covers up to 250 hectares during the wet season. It supports a dynamic ecosystem and lies on one of the most important bird migration routes in the world. Other wetlands include the Yammounh Lake in north Bekaa (most of which was drained) and Hima Kfar Zabad in West Bekaa.

Coastal aquifers and related ecosystems - Coastal aquifers in Lebanon (Figure 18), are mainly karstic in nature, and groundwater satisfies nearly 45% of the country's total water needs. In 2005, water withdrawal by sector was distributed among agriculture (60%), domestic uses (29%) and industry (11%). This trend is generally reflected in the consumption of groundwater from coastal aquifers, though some aquifers are exploited primarily for either industry or domestic uses. At present, there are limited monitoring networks for groundwater levels but none for groundwater quality. Annual precipitation on the coastal plain ranges from 600 mm to 1,000 mm.

[1] The government of Egypt will provide some updated information on priorities during the inception phase of the project.



Figure 18 Main coastal aquifers in Lebanon (UN Environment/MAP and UNESCO-IHP, 2015)

Together, high coastal population density (greater than 1,500 inhabitants per km²) and a heavy reliance on groundwater exert significant pressures on coastal aquifers. Seawater intrusion is the most common quality problem in coastal aquifers resulting from over-exploitation of groundwater. Agriculture is the main pressure driver for several risks associated

with coastal aquifers, including salinization, nitrification and yield reduction. Industrial activities have also introduced heavy metals, organic compounds and hydrocarbons into some aquifers. An overview of the analysis of the main coastal aquifers in Lebanon undertaken for the MedPartnership is provided in Figure 19.

Aquifer name	Nutrients	Other Pollutants	Dependency for Domestic Uses	Links with Ecosystems	Salinization
Afka					
Beirut					
Chekka					
Damour					
South					
Tripoli					
Tyr-Saida					
Zarka					



Figure 19 Findings of the analysis of the main coastal aquifers in Lebanon undertaken in the MedPartnership (UNEnvironment/MAP and UNESCO-IHP, 2015)

Submarine groundwater discharges - It is estimated that coastal aquifers in Lebanon discharge about 0.4 billion m³ of groundwater to the Mediterranean Sea each year.

Policy and legal aspects of water management - Lebanon has undertaken a major reform of the institutional framework for its water sector with the adoption of law no. 221/2000. From the legal perspective, there is no comprehensive water law as such, but rather scatted texts, some of them dating back to the Ottoman period (provisions from the Mejelle 1875) and French mandate (1925 & 1926). The Water Code, for which drafting starting in 2003, was recently adopted (2018). Overall, the legislation is fragmented with weak enforcement. An overview of the most relevant information concerning the policy and legal framework for water resources in Lebanon is set forth in Figure 20.

Water policies and strategies

Main principles and objectives	<p>The National Water Sector Strategy (2010-2018) is composed of three documents:</p> <ol style="list-style-type: none"> 1. Baseline for the Strategy (September 2010) 2. Forecasts for water supply and demand (November 2010) 3. Investment plan for the period 2011-2015 (December 2010), with four pillars: <ol style="list-style-type: none"> i. Institutional reforms as defined by Law no. 221/2000, amended by Law no. 241 (of 7 August 2000) and Law no. 377 (14 December 2001). ii. Improve the financial performance of the sector: participation of the private sector, and establishment of more rational tariffs. iii. Adopt the water law and develop the legal framework for the national Strategy iv. Include environmental concerns in the water sector such as protection of the water resources and of the recharge zones. <p>The implementation of the National Strategy is compromised by the political situation in Lebanon.</p>
Consideration of groundwater and of coastal aquifers	<p>The plan recognizes the need of a global approach with elements of Integrated Water Resources Management (IWRM). Lebanon ratified the ICZM Protocol (decree No. 639 dated 18/9/2014).</p>
Legal framework (Main principles and measures)	
Water ownership	Water (including groundwater) is a public property with the exception of the acquired rights (Order n°144/S 1925)
Groundwater consideration	<p>Decree n°14438 (2 May 1970) organizing the exploration and use of groundwater.</p> <p>Ministerial order n°118 (13 September 2010) defines the administrative procedure for the permits.</p>
Coastal aquifers consideration	The ICZM Protocol ratified (Decree No. 639 dated 18/9/2014).

Figure 20 Overview of policy and legal aspects of water management in Lebanon (UN Environment/MAP and UNESCO-IHP, 2015)

Submarine groundwater discharges - Along the coast of Lebanon, major submarine groundwater discharges (SGDs) have been observed since antiquity. One of the 17 freshwater submarine springs in the Chekka Bay in North Lebanon is presumed to be the largest in the Mediterranean Sea, with a peak flow six to seven times greater than the flow of the Litani

River (the largest in Lebanon) during the low-flow periods (Todd 1967). The main reasons for the SGDs into the sea along the Lebanese marine environment are (1) the highly karstic and fractured (i.e., highly permeable) rock formations that are genetically connected with faults and karstic routes extending from the land into the sea, and (2) the prevailing seaward-sloping rock strata (Shaban et al., 2005).

Synopsis of priorities and gaps - The regulatory, strategic and institutional frameworks for sustainable development, climate change, spatial planning and the integrated management of the coast are broadly in place and reasonably well developed. The weaknesses and gaps in ICZM in Lebanon lie primarily in the lack of a strategic context involving full consideration of coastal groundwater, impacts from upstream activities and ecosystem health, and effective coordination and enforcement. Lack of legal institutional frameworks for groundwater governance in general, and coastal aquifers in particular, poses serious threats to environmental and socio-economic sustainability in large sections of the coastal zone.

The priorities identified include:

- Developing ICZM-specific legislation to implement the Protocol;
- Preparing a comprehensive national strategy for ICZM;
- Creating a coastal management unit and strengthening of ICZM expertise and centers of specialization in coastal management;
- Establishing of a coherent ICZM strategies and plans at local levels;
- Raising awareness as an important prerequisite for successful implementation of coastal and water laws and policies;
- Dedicating additional resources to environmental monitoring and technical assistance for monitoring of coastal indicators; and
- Improving mechanisms for women's participation in integrated coastal management

Relevant UNDAF priorities – One of the core priorities of Lebanon's UNDAF 2017 – 2020 is to reduce poverty and promote sustainable development, while addressing the country's immediate needs in a manner that is sensitive to human rights and gender issues. Outcomes corresponding to this priority include the protection of forests, land and water ecosystems; improvement of water quality and reduction of water pollution; and protection of coastal zones. The activities of Child Project 2.1 will contribute to these outcomes through activities to promote the sustainable development of the coast and its resources using ICZM instruments, and to enhance the protection and sustainable management of coastal groundwater resources and their related ecosystems. Further contributions to the UNDAF in Lebanon will be achieved through the building of institutional capacity on climate change adaptation, marine spatial planning, collection of water data, and the conjunctive management of surface water and groundwater. Finally, gender has been mainstreamed in the activities of the project, including specific actions to promote gender equality and inclusivity.

THE COASTAL ZONE OF LIBYA

The Mediterranean coast and the Sahara Desert are Libya's most prominent natural features. Libya has the longest Mediterranean coastline (1,770 km) and is home to many unspoiled beaches. Seventy-five percent of Libya's population is concentrated in 1.5% of the total area of the country in two main coastal areas: 54% in the western coastal area (Jafara Plain and Misratha area) and 21% in the eastern coastal area (Al Jabalal Akhbar) (FAO, 2005). Libya's coastal zone also features several protected natural areas which sustain the country's biodiversity. These include national parks, four protected areas, one nature reserve, four Important Bird Areas, and two Ramsar Sites, both of which are part of the Kouf National Park (an important wetland for migratory and resident water birds).

Coastal urbanization - The percentage of built-up area in Libya within the first 10 km from the coastline increased from 3.2% in 1975 to 5.5% in 2015, the second lowest percentage of all Mediterranean countries (UN Environment-GRID, 2017). In the first kilometer, this percentage was 5.1% in 1975, while in 2015 it was 8.8%. Within the first 150 meters from the coastline, the percentage of built-up land in 1975 was 2.2%, while in 2015 it was 5.3%. Libya has increased its initial land-take between 1975 and 2015 by 75% in the first 10 km, by 73% in the first kilometer and by 141% in the first 150 meters from the coastline.

Legal framework for the coastal zone - Libya has not yet ratified the ICZM Protocol but some existing laws are in place to protect the coastal zone's natural, archaeological, historical and tourist resources, and to prevent littoral urbanization. Libya has a wide range of well-established conservation legislation dating back to the 1940s to protect natural resources such as forests and "green areas", to establish national parks and to prevent pollution. The Ministry of Local Government /Department of Urban Planning apply Planning policies (Law 3 of 2001) concerning urban planning and executive regulation of the law, land use and classification regulation. A technical committee evaluates investment projects (under supervision of the Investment Promotion Authority) especially near the coast, for example tourism activities, power stations, sea ports, and new urban areas. Proposals for these types of activities must be accompanied by an environmental impact assessment and are subject to approval by Libya's Environment General Authority and related parties. Proposals for tourism development must also provide an assessment of the area's tourism carrying capacity to demonstrate how tourism will impact natural resources and how these resources will be preserved for future generations.

Setback - According to regulations governing Libya's urban planning law, a 100-meter setback zone for development is required. However, there are exceptions for certain activities, such as tourism.

Institutional framework for coastal zone - Several institutions share the responsibility for economic development and natural resource use in the coastal zone. The Ministry of Planning heads a National Committee for Sustainable Development which brings together relevant ministries and experts. The Ministry of Local Government/Urban Planning applies planning policies. The Environmental General Authority is the body responsible for environmental monitoring, implementation and enforcement. The General Water Authority is responsible for water resources management including aquifers and coastal waters. Libya has no specialized research center dedicated to ICZM. The Ministry of Social Affairs is mandated to promote women's rights related to education, work, and status, and they report that there are no legal obstacles to women's participation in any particular field.

Inter-ministerial coordination - Several ministries coordinate economic development activities through the National Committee for Sustainable Development, however, there is no mechanism for inter-ministerial coordination for ICZM.

Planning and ICZM - Currently, preparations are underway for the ratification of the ICZM Protocol and the assessment of the requirements to update and transpose its Articles into domestic legislation. Libya does not currently define its coastal zone in the same terms as the ICZM Protocol. The Environment General Authority is currently leading the preparation of a national project to adopt the ICZM Protocol and to prepare a national strategy in coordination with PAP/RAC. Furthermore, the law relating to the protection and improvement of the environment is being updated and revised to incorporate the requirements of the ICZM Protocol, the Barcelona Convention and other international conventions. Libya has cooperation agreements with riparian countries for the joint management of their shared transboundary water basins (Northern Western Sahara Aquifer System, Nubian Aquifer, Lake Chad), which include provisions for technical and institutional coordination. A national strategy for sustainable development was prepared in 2008 but has not yet been implemented. Similarly, a national committee for climate change has been formed but no national report or adaptation plan has been prepared.

Monitoring – There are no structured environmental monitoring systems in place in Libya.

Surface waters and related ecosystems - Libya's water supplies come from four sources: groundwater (95%); surface water, including rainwater and water stored in reservoirs (about 2%); desalinated seawater (about 2%); and wastewater recycling (about 1%). The surface water resources in the northern regions of the country have been mobilized to a

certain extent by the construction of dams. On average, the total amount of surface water available in a given year is 60 Mm³ while the country's dams have been designed for a total storage capacity of 389 Mm³. Libya has two Ramsar Sites, with a total surface area of 83 hectares.

The population of Libya is unevenly distributed and concentrated in the fertile land and zones of industrial activities along the Mediterranean coastline, resulting in considerable water supply deficits in these areas. In the 1960s, Libya turned to desalination as an additional source of water, eventually becoming one of the largest users of both thermal and membrane desalination technologies in the Mediterranean region. Libya also had 79 wastewater treatment plants in 2010 with a total capacity of 74 Mm³, all of which were designed to produce effluents suitable for irrigation. However, out of the 504 Mm³ municipal wastewater produced in 2012, only 40 Mm³ were treated and directly used in irrigation on 2,900 hectares. In rural areas people depend to a large extent on private water supply wells, rainwater reservoirs, and springs. A large number of industries, such as the chemical, petrochemical, steel, textile and power generation industries, depend on private sources for water supply, including from the desalination of seawater.

Coastal aquifers and related ecosystems - Groundwater supplies 95% of the water used in Libya (Figure 21). Forty percent of Libya's population is located in the Jafara Plain, in an area that represents 1% of the country's surface area. The coastal aquifer system in this area is composed of a shallow unconfined aquifer with Mio-Quaternary deposits and dolomitic limestone, and a deep, confined aquifer of Miocene deposits. The shallow coastal aquifer provides most of the irrigation and domestic water in the Jafara Plain. Other coastal aquifers of note include the Gulf of Sirte aquifer and the Jabal al Akhdar aquifer. The Gulf of Sirte aquifer, though large in extent, has a very small exploitation due to its highly saline groundwater. The Jabal al Akhdar aquifer is used primarily for irrigated agriculture and is monitored for groundwater levels and water quality. Rainfall is less than 100 mm per year in 93% of Libya's land surface; arable regions – such as Jabal al Akhdar zone of Cyrenaica and the Jafara Plain – receive between 250 mm and 600 mm per year.

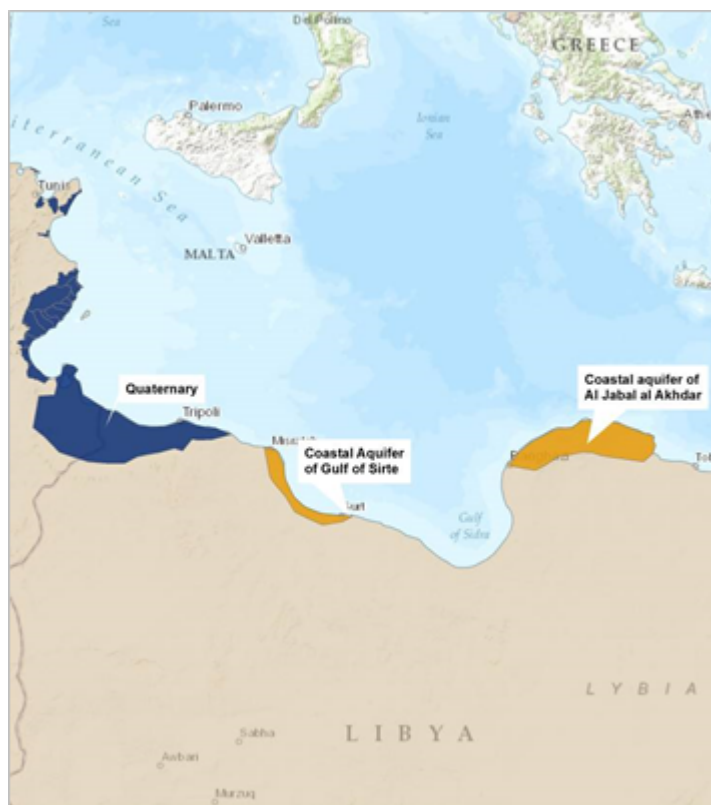


Figure 21 Main coastal aquifers in Libya (UN Environment/MAP and UNESCO-IHP, 2015)

Intense exploitation has led to seawater intrusion in most coastal aquifers. In the Jafara Plain aquifer, inflow from the sea was estimated at 166 Mm³/yr. Irrigation water with increased salinity levels has led to problems with soil salinization and serious effects on the citrus crops in the coastal zone. Furthermore, the water distribution systems are experiencing problems with corrosion to metallic components (e.g. pipes and taps) from increasingly saline water, resulting in increased maintenance costs and potential health hazards from dissolved metals. Pollution problems stemming from unlined septic tanks have also been documented. An overview of the analysis of the main coastal aquifers in Libya undertaken for the MedPartnership is provided in Figure 22[1].

Aquifer name	Nutrients	Other Pollutants	Dependency for Domestic Uses	Links with Ecosystems	Salinization
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Figure 22 Findings of the analysis of the main coastal aquifers in Libya undertaken in the MedPartnership (UN Environment/MAP and UNESCO-IHP, 2015)

Submarine groundwater discharges - While submarine groundwater discharges from Libya's karstic coastal aquifers are thought to be appreciable, no official statistics could be identified.

Policy and legal aspects of water management - Libya had adopted a comprehensive Water Code (1982); complemented by various legislations related to water resources such the Environmental Protection Law (2003) and various Decrees and Decisions by the Council of Ministers. Strong attention is given to water abstraction in specific coastal areas, with severe limitations, or even banning. An overview of the most relevant information concerning the legal framework for water resources in Libya is set forth in Figure 23.

Water policies and strategies / Water resources strategy 2000 - 2025	
Main principles and objectives	<p>Objectives:</p> <ul style="list-style-type: none"> · Reduce the deficit in the water budget · Prevent water quality deterioration <p>Strategy components:</p> <ul style="list-style-type: none"> · Minimize the water budget deficit · Develop conventional and non-conventional water resources · Protect water resources from pollution · Recover the costs of providing water · Develop human and institutional capacities · Improve and strengthen water legislation · Promote technical cooperation in the fields of water resources management

Consideration of groundwater and of coastal aquifers	Groundwater represents 95% of total water use in Libya. It occurs in renewable coastal aquifers in the north and in large non-renewable aquifers in the southern and central basins. In 2006, extraction from coastal aquifers amounted to 1,673 Mm ³ or 34% of total groundwater extraction. The strategy therefore emphasizes the importance of the protection of the coastal aquifers by reducing their water budget deficit through inter-basin water transfer from the south and development of non-conventional resources such as desalination and treated wastewater.
Legal framework (Main principles and measures)	
Water ownership	Water is a public ownership (Law No. 3 of 1982 Water Code)
Groundwater consideration	Law No. 3 of 1982 Water Code

<p>Coastal aquifers consideration</p>	<p>Decree No. 791 for the year 1982:</p> <ul style="list-style-type: none"> · Covering additional water demand for existing or new projects within the Jafara Plain and the western coastal belt by extracting additional water from the first aquifer is prohibited · Drilling new or substitute water wells in the Jafara Plain is prohibited · The Benghazi plain area is put under "restricted water use" and drilling new production wells in the northern part of the Benghazi plain is prohibited · The first aquifer in the area between Khoms and Misurata is put under absolute ban for additional groundwater abstraction · The El-Marj Plain area is put under "absolute ban" for additional groundwater abstraction <p>Seawater intrusion (coastal aquifers) is given a special attention in Article 41 of the environmental protection law which pointed the cautious use of aquifers to ensure no intrusion of seawater or water from other formations of higher salinity or lower quality.</p> <p>Article 4 of Decision No. 791 of 1982 necessitates the application of collective irrigation in areas experiencing water shortages as a result of continuing decline of the water table in the first aquifer, as well as in areas with signs of seawater intrusion.</p> <p>Article 5 on the regulations for domestic water exploitation states that:</p> <ol style="list-style-type: none"> 1. It is not allowed to pump additional groundwater in excess of current rates to cover domestic use for coastal cities all along the coastline. 2. Necessary measures must be taken to assess the current and future demand for domestic water use in coastal cities through the establishment of desalination plants. <p>Article 6 on the regulations for industrial water exploitation states that water requirements of industrial projects shall be met through seawater desalination or from deep aquifers either directly or after treatment, if necessary.</p>
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Figure 23 Overview of policy and legal aspects of water management in Libya (UN Environment/MAP and UNESCO-IHP, 2015)

Synopsis of priorities and gaps - According to MEHSIP (2008), the major environmental concerns in Libya are water availability in general and the depletion of groundwater in particular, as a result of overuse in agricultural developments, causing seawater intrusion in coastal aquifers. Another significant environmental problem is water pollution on the

coastal environment from the combined impact of sewage, oil by-products, and industrial waste. Pollution resulting from human activities occurs mainly near large coastal cities and is concentrated on rather few urban/industrial areas on the coast. Assessment of the Libyan coastal environment revealed that the main sources of pollution are urban and industrial sewage, in addition to improper solid waste management.

The development of ICZM in Libya is limited. However, there some efforts have been taken to support the ratification and adoption of the ICZM Protocol along with the development of national strategies for sustainable development and climate change adaptation. Institutional and research capacity in these disciplines remains limited. Lack of legal institutional frameworks for groundwater governance in general, and coastal aquifers in particular, poses serious threats to environmental and socio-economic sustainability in large sections of the coastal zone.

The priorities identified include:

- Ratifying the ICZM Protocol;
- Updating national legislation where necessary to fully transpose the ICZM Protocol into the national legal framework;
- Preparing a national ICZM Strategy incorporating climate change adaptation, and its implementation;
- Raising awareness and building capacity needed for successful implementation and enforcement of coastal and water laws and policies;
- Technical assistance for monitoring of coastal indicators; and
- Support for the management of transboundary groundwaters with neighboring states.

Relevant UNDAF priorities – In its Strategic Framework 2013 – 2014, the United Nations Team in Libya identified the conservation of natural resources (including water) as a national objective contributing to the agricultural sector. Child Project 2.1 will strengthen the capacity of institutions in Libya to assess and sustainably manage coastal groundwater resources and to implement approaches for the conjunctive management of surface water and groundwater, thus contributing to increased water security in the country. Furthermore, the project will promote uptake of ICZM instruments as an effective tool to assist Libya in the sustainable development of the coast and its resources, thereby also contributing to the country's goal to achieve economic recovery. Finally, gender has been mainstreamed in the activities of the project, including specific actions to promote gender equality and inclusivity.

THE COASTAL ZONE OF MONTENEGRO

Montenegro's coastline extends along 294 km of the Adriatic Sea. A prominent element of its coast is a submerged river canyon known as the Bay of Kotor. The major rivers of Montenegro include the Drina, Tara and Lim. Montenegro's largest lake is Lake Skadar (shared with Albania). The coastal area is relatively well developed and is the most densely populated region of Montenegro. Tourism is the country's key economic sector, and accounts for 15% of Montenegro's GDP and 15% of its total employment, predominately in the coastal zone. Other sectors where substantial growth can be expected are maritime transport (with related development of port facilities), industry and agriculture. Zones of local importance for industrial development are smaller locations in Tivat, Sutorinsko (Herceg Novi) and Ulcinjsko field. Two or three regional/municipal landfills are planned in the coastal zone.

Coastal urbanization - The percentage of built-up area in Montenegro within the first 10 km from the coastline increased from 1.3% in 1975 to 3.3% in 2015 (UN Environment-GRID, 2017). In the first kilometer, this percentage was 4.9 % in 1975, while in 2015 it was 11.3%. Within the distance of the first 150 meters from the coastline, the percentage of built-up land in 1975 was 4.9%, while in 2015 it was 14.1%. Montenegro has increased its initial land-take between 1975 and 2015 by 154% in the first 10 km, by 130% in the first kilometer and by 187% in the first 150 meters from the coastline.

Legal framework for the coastal zone - Montenegro ratified the ICZM Protocol and adopted it as an integral part of the national legal system with precedence over national legislation. However, the detailed provisions of the ICZM Protocol have yet to be fully transposed into domestic law (such as the new Law on the Maritime Domain, etc). The Coastal Area Spatial Plan, adopted in 2018, defines the coastal region that includes in addition to the land part defined by the Law on regional development (including the territories of six coastal municipalities), also the territorial sea and exclusive economic zone as defined by the Law on the Sea. The new Law on the Maritime Domain for the protection and sustainable management of the maritime domain and coastal strip is also in the process of preparation for adoption. Furthermore, Montenegro is a candidate country for membership in the EU and its Negotiation Position for Chapter 27 – Environment and Climate Change was adopted by the Montenegrin Government in February 2018. It is expected that the Chapter will be opened by the end of 2018.

Setback - The existing spatial planning legislation stipulates that no residential or other development shall be constructed within 100 meters from the coastline in undeveloped coastal areas. The comprehensive establishment of the coastal setback is now in effect, following the adoption of the Special Purpose Spatial Plan for the Coastal Area of Montenegro in 2018.

Institutional framework - The Ministry for Sustainable Development and Tourism, Directorate for Climate Change and Mediterranean Affairs is the competent entity for the implementation of the National Strategy for ICZM, including the coordination of relevant activities. The relevant national entities with responsibilities for the ICZM Protocol implementation include the Ministry for Sustainable Development and Tourism, the Ministry of Agriculture and Rural Development, the Ministries of Culture, Transport and Maritime Affairs, the Agency for Protection of Nature and Environment, the Public Enterprise for Coastal Zone Management, and local governments of coastal municipalities.

Inter-ministerial coordination - Coordination is organized at the political level through the National Council for Sustainable Development, Climate Change and ICZM. The Council includes ministerial representatives, institutes' and public enterprise directors, local government presidents, private sector, NGO and trade union representatives, along with independent experts and academia. Further, a Coordination Body for ICZM acts as the expert body for the National Council to provide a forum for debate and technical advice.

Planning and ICZM - In line with the ICZM Protocol requirements, Montenegro adopted the National Strategy for ICZM in 2015. The Strategy provides a framework to protect natural, landscape and cultural assets, and to harmonize spatial and development plans and inter-sectoral activities up to 2030. The Strategy's Action Plan includes measures and priority actions in a five-year implementation period up to 2020. The ICZM Strategy was prepared through the Coastal Area Management Program Montenegro (CAMP MNE), under the Memorandum of Understanding between the Government of Montenegro and UN Environment. Other CAMP MNE activities include coastal Vulnerability Assessments (2102 & 2013) for erosion, seismic hazard and climate change. The Action Plan for the ICZM Strategy includes the establishment of risk management systems for natural and anthropogenic hazards, along with the reporting of the state of the coastal zone, monitoring coastal processes, and the development of resource use management plans and programs. Short to medium term priority actions and project fiches include:

- Operational actions to resolve urgent targeted problems;
- Systemic actions to stimulate changes in the way systems functions;
- Demonstration actions to serve as models or as means for transferring positive experiences.

The Integrated Resources Management Plan (IRMP) for the Buna/Bojana area (2015), prepared under the MedPartnership, covers the coastal transboundary area of Montenegro and Albania.

Monitoring - The Agency for Nature and Environmental Protection is responsible for Montenegro's monitoring program, under supervision of the Ministry for Sustainable Development and Tourism. Like Albania, Montenegro will also take steps to strengthen its environmental monitoring systems through its participation in the GEF Adriatic Project, which aims to align the national monitoring systems of both countries with the requirements of IMAP. Furthermore, the Montenegrin institutions responsible for environmental monitoring have participated in TAIEX (Technical Assistance and Information Exchange instrument of the European Commission) expert missions and workshops organized recently to begin the process of transposing the requirements of the Marine Strategy Framework Directive into the country's national legal and policy framework.

Surface waters and related ecosystems - The distribution and abundance of water resources vary significantly in Montenegro. Generally speaking, with an average annual runoff of 624 m³/s (i.e. 19.67 billion m³ per year), the territory of Montenegro is among the world's water rich countries. The Adriatic Sea water basin in Montenegro has an area of 6,268 km² (45 % of the country's territory) and an average runoff of $11,814 \times 10^6$ m³/year. Montenegro has more than 20 large lakes, of which six are glacial. Of these, the most significant is Lake Skadar, a transboundary water body that Montenegro shares with Albania. Several other water courses and water bodies are shared with the neighboring countries. Since 2006, Montenegro has been a party to the Ramsar Convention and presently has two Ramsar Sites: Lake Skadar and Tivat Saline, with a combined area of 20,150 hectares. For many years, the devastation of riverbeds in Montenegro and the surrounding areas due to the Illegal exploitation of gravel and sand from river basins has been a major ecological, economic and aesthetic issue. This has led to the meandering of rivers and the creation of an unnatural landscape - huge craters from which materials were extracted and dumps of barren materials left in the riverbed and on the banks. As all concession acts for exploitation of sand and gravel expired in 2016, the Ministry of Agriculture and Rural Development adopted a decision in 2017 to temporarily ban further exploitation of sand and gravel from all rivers in Montenegro. Subsequently, the Operational Working Group was established to monitor all illegal activities, while in parallel all necessary technical and research activities will be conducted to assess extraction capacities and implement extraction activities according to new data. Currently floods occur primarily due to the country's torrential hydrological regimen, triggered by the fact that about 94% of the territory has a slope above 5 percent. Therefore, floods potentially threaten 250 km² of farmland and urban zones and this is particularly pronounced in some areas surrounding Lake Skadar and Bojana River, Zeta and Bjelopavlici

plains, Plav ravine and the Lim, Tara, Cehotina, Morača and Ibar river valleys. The need for flood protection measures is particularly evident in the large flat karst plain areas (e.g. Barsko, Cetinjsko and the groves of the Matica valley). Most of the constructed drainage systems are not in operation, in general due to insufficient maintenance.

Coastal aquifers and related ecosystems - Montenegro has two coastal aquifers (Figure 24), the Bojana aquifer, which extends into the territory of Albania, and the Boka Bay aquifer. Along the coast, the Bojana aquifer is characterized by alluvial deposits, while further inland it is karstic in nature. It is primarily used for domestic activities including the supply of drinking water, though it also ensures an important supply of water for irrigation. The Boka Bay aquifer is another important coastal aquifer, supplying water to the municipalities of Kotor, Tivat, Herceg Novi and also sustaining the Tivatska solila wetland. Precipitation in Montenegro's south-western coastal zone ranges from 1,500 to 2,000 mm/yr, while in the north eastern mountain ranges of Orjen, Lovćen and Rumija it is typically over 3,000 mm/yr. Seawater intrusion is the major problem facing the coastal aquifer in Montenegro. While some degree of salinization is natural in origin, most elevated salinity levels are the result of seawater intrusion. This is caused by increased abstractions in the coastal area to supply water to growing coastal populations that include a significant number of tourists in summer months. Groundwater extraction rates are at their highest during these dry summer months when there is decreased aquifer recharge from precipitation, resulting in significant lowering of groundwater levels (for example in the Bojana aquifer) and consequently an increase in the occurrence of seawater intrusion.

Demands for water in the coastal zone are increasing and are estimated to reach 68 Mm³/yr by 2021, while the estimated available reserves of groundwater in the coastal zone by this date are estimated at 256 Mm³/yr. Significant threats to the quality of coastal groundwater include the discharge of untreated domestic wastewater through submarine outfalls and unchecked urban development for the tourism industry. An overview of the analysis of the main coastal aquifers in Montenegro undertaken for the MedPartnership is provided in Figure 25.

Submarine groundwater discharges - It is estimated that coastal aquifers in Montenegro discharge approximately 2,511 Mm³/yr to the Adriatic.

Policy and legal aspects of water management - In the preparation of the Water Law (Official Gazette of the Republic of Montenegro, No. 27/2007) an effort was made to harmonize its provisions with the EU Water Framework Directive 2000/60/EC (WFD). Preparation of by-laws for the implementation of the Law and for further transposition of relevant EU Directives such as the Groundwater Directives (2006/118/EC), Bathing Waters (2006/7/EC), Nitrates Directive (91/676/EEC), and others are underway. An overview of the most relevant information concerning the legal framework for water resources in Montenegro is set forth in Figure 26.



Figure 24 Main coastal aquifers in Montenegro (UN Environment/MAP and UNESCO-IHP, 2015)

Aquifer name	Nutrients	Other Pollutants	Dependency for Domestic Uses	Links with Ecosystems	Salinization
Boka bay aquifer					



Figure 25 Findings of the analysis of the main coastal aquifers in Montenegro undertaken in the MedPartnership (UN Environment/MAP and UNESCO-IHP, 2015)

Water policies and strategies

<p>Main principles and objectives</p>	<p>The Water Basis (2001) contains the description of the status of water and water management facilities according to individual areas, the conditions for maintenance and development of water resources to ensure the most advantageous and the most expedient technical, economic and environmental solutions for uniform water management, protection from adverse effects of water, protection of waters against pollution and the water use.</p> <p>The Strategy for water management of Montenegro (2017) sets the basis for the water sector reforms which will be implemented in order to fulfill the necessary standards in water management, including organizational adjustments and systemic strengthening of professional and institutional capacities at the national and local level. Strategic commitments and goals set in this document constitute the basis for the development of water management plans. At the same time, it sets the frameworks that must be respected in the development of strategies and plans for spatial planning, environmental protection and other areas that are water-dependent or produce impacts on water.</p> <p>The National Strategy for Sustainable Development until 2030 (NSSD 2030) adopted in 2016 fully integrated the UN 2030 Agenda for Sustainable Development. The NSSD offers an answer to unsustainable development trends (e.g., use of mineral resources, forests, water, space, human resources, ...); institutional framework that does not comply with the requirements for the implementation of the policy of sustainable development and the requirements of a good governance and the noncompliance of real actions with the expressed political support and official commitments. It defines guidelines for aligning the conflicting sectoral policies both among themselves and with the NSSD, as well as with environmental policy. It also incorporated the Action Plan of the National Strategy for ICZM.</p> <p>The National Strategy for Integrated Coastal Zone Management (NS ICZM, adopted in 2015):</p> <ul style="list-style-type: none"> · Contains a special part related to water, covering all waters including groundwater; · Identifies key issues, challenges and strategic goals for integrated coastal zone management; · Comprises a set of operational objectives for each goal, with measures, activities, indicators and partnerships for implementation.
<p>Consideration of groundwater and of coastal aquifers</p>	<p>The Water Basis provides description of all groundwater sources, per water basin, capacities of individual groundwater source, as well as their usage, pollution prevention and protection measures. The overall assessment of the state of groundwater shows that ecological status is good. Main sources of pollution are communal waste waters, industrial waste waters, usage of fertilizers and intrusion of saline waters in coastal area.</p>
<p>Legal framework (Main principles and measures)</p>	

Water ownership	Water is State property (article 6 Water Law).
Groundwater consideration	Groundwater is considered under the Water Law.
Coastal aquifers consideration	The Law on Public Maritime Domain includes in the Public Maritime Domain submarine springs and wells on the shore (article 2) (Official Gazette of the Republic of Montenegro, No. 14/92).

Figure 26 Overview of policy and legal aspects of water management in Montenegro (UN Environment/MAP and UNESCO-IHP, 2015)

Synopsis of priorities and gaps - It is necessary to increase the sustainability of the coastal regions of Montenegro through sound management of aquifers in a way that local environmental gains can be achieved in response to the anticipated significant economic growth expected in the coming years. Furthermore, with the anticipated increase in climatic variability in the region and frequent flood and drought events, the water in the local aquifers can sustain environmental sustainability – both in terms of socio-cultural aspects, as well as coastal and marine biodiversity. Lack of legal institutional frameworks for groundwater governance in general, and coastal aquifers in particular, poses serious threats to environmental and socio-economic sustainability in large sections of the coastal zone. ICZM in Montenegro has been seen as the key to achieving sustainable development of the coastal zone, and substantial steps have been taken to develop ICZM policy and an implementation framework, including the National ICZM Strategy. The necessary pre-conditions are therefore mostly in place to deliver ICZM. However, the key weaknesses and gaps lie in the development of the wider supporting, legislative framework, including spatial plans. However, this is very much part of a wider ‘work in progress’ as Montenegro moves towards EU Accession.

The priorities identified include:

- Preparing a detailed vulnerability assessment of the coast and the sea at the selected locations out of six priority locations proposed in the National ICZM Strategy;
- Integrating the general vulnerability assessment in the narrow coastal zone in the CAMP Montenegro project, and continuing efforts to collect missing data to insure accurate analysis and projections;
- Developing local ICZM plans that integrate Climate Variability and Change and projections. Local plans should be concrete enough to ensure the increase of the resilience to climate change through the application of the ICZM tools. As a positive example, the Šibenik-Knin County Coastal Plan should be used;
- Establishing a coastal database (a coastal observatory), in line with the Action Plan of the National ICZM Strategy, aiming to ensure at least:
- generation and collection of data for the selected ICZM priority indicators;
- continuous monitoring through application of these indicators;
- support of the ICZM coordination mechanism to ensure institutional coordination and cooperation needed for the unhindered functioning of this database.
- Support for the measures and activities to realize the vision of the IRMP for the Buna/Bojana area; and
- Support for awareness raising and capacity building as a prerequisite for successful implementation and enforcement of coastal and water laws and policies.

Relevant UNDAF priorities – Environmental sustainability is recognized by Montenegro as one of the five priority areas in its UNDAF 2017 – 2021, and sustainable management of natural resources is referenced in this area's priority outcome: "By 2021, the people of Montenegro are benefitting from sustainable management of cultural and natural resources, combatting climate change and disaster-risk reduction." To achieve this outcome, the UNDAF references several national priorities, including capacity building for governmental institutions in the domains of environmental protection and climate change, and the enhancement of water quality management and access to clean water for all. Child Project 2.1 will contribute to these national priorities through activities to promote the sustainable development of the coast and its resources using ICZM instruments, and to enhance the protection and sustainable management of coastal groundwater resources and their related ecosystems. Further contributions to the UNDAF in Montenegro will be achieved through the building of institutional capacity on climate change adaptation, marine spatial planning, collection of water data, and the conjunctive management of surface water and groundwater. Finally, gender has been mainstreamed in the activities of the project, including specific actions to promote gender equality and inclusivity.

THE COASTAL ZONE OF MOROCCO

Morocco's Mediterranean coast is approximately 512 km in length and is subject to the influence of Atlantic waters. It is characterized by an often-uneven relief with cliffs valleys, bays and beaches. The eastern part of the Mediterranean coast of Morocco is flatter and is characterized by the presence of a large coastal lagoon (Nador Lagoon) and the mouth of a major watercourse (La Moulya). Anthropogenic pressure on the Mediterranean coast of Morocco is concentrated in three major urban agglomerations (Tangiers, Tétouan and Nador), two major industrial centers (Tangiers and Nador), and three important ports (Tangier, Al Hoceima and Nador). In addition, the area is subject to the impact of heavy shipping traffic crossing the Strait of Gibraltar. Morocco's coastal zone attracts both domestic and international tourism with hotel units, second homes, and marinas (Saïdia, Marina Smir and Kabila) benefiting from the natural attractiveness of the area. Fishing in the northern zone of Morocco is essentially coastal and artisanal. Marine biodiversity is supported by habitats provided by several natural areas on the Mediterranean coast of Morocco including: Mouth of Moulouya, Nador Lagoon, Cape Three Forks, Cirque of Jebha, Coast of Rhomara, Koudiat Taifour, Smir Lagoon and Jebel Moussa.

Coastal urbanization - The percentage of built-up areas in Morocco within the first 10 km from the coastline increased from 0.8% in 1975 to 2.8% in 2015 (UN Environment-GRID, 2017). In the first kilometer, this percentage was 3.2 % in 1975, while in 2015 it was 8.5%. Within the distance of the first 150 meters from the coastline, the percentage of built-up land in 1975 was 2.9%, while in 2015 it was 7.6%. Morocco has increased its initial land-take between 1975 and 2015 by 234% in the first 10 km, by 170% in the first kilometer and by 164% in the first 150 meters from the coastline.

Legal framework of the coastal zone - Morocco ratified the ICZM Protocol in 2012. The comprehensive Littoral Law (the 'Loi Littoral') adopted in 2015 establishes the framework for the integrated management of the coast. The Law requires the development of a National Coastal Plan and Regional Schemes for the coast, taking into account the limit of the non-buildable area and the areas in which certain types of activities are prohibited or subject to certain restrictions. The Law sets out specific measures for the management, protection, conservation and development of the coast including protection, conservation and development; access to the shoreline; specific provisions for beaches; protection against pollution;

and promotion of scientific research and innovation. However, although the Littoral Law has been adopted, it has not been fully implemented. In addition, the geographical extent of the coast in Morocco has not been defined according to the Article III of the ICZM Protocol.

Setback - The Littoral Law defines a “non-constructible zone” of 100 meters from the coast within which development is prohibited, except for necessary constructions or installations. This non-constructible zone may be extended for reasons of habitat protection or coastal erosion. Non-marine transportation infrastructure must be located at least 2,000 meters from the shoreline.

Institutional framework for the coastal zone - Currently, the Moroccan coastline is governed by multiple, fragmented texts, often outdated and applied in an uncoordinated manner by many institutions, including sectoral ministries and departments. The Ministry of the Environment leads on ICZM and is implementing the ICZM approach through actions and projects with partners at local, national, regional and international levels.

Inter-ministerial coordination - Management of the coast is still heavily influenced by sectoral administrative boundaries. However, the Littoral Law is promoting a more integrated approach going forward. The Law requires that the National Coastal Plan (PNL) and the Regional Schemes be submitted to a "National Commission for Integrated Coastal Management", composed of relevant administrations, councils of the regions, public institutions, research institutes, concerned organizations and professional bodies, as well as representatives of associations active in the field of coastal protection.

Planning and ICZM - The Department of Territory Planning has initiated a “National Strategy for the Littoral” and completed a strategic diagnostic. The PNL is also being developed and should be submitted to the National Commission by the end of 2018. There is a difference, however, between the administrative unit-based boundaries of the Strategy and the more narrow, ecological-based boundaries of the PNL, this difference reflecting the respective lead government departments of Territory Planning and Environment. Tenders for the Regional Schemes of the Coast, as required under the Littoral Law, are in progress. Morocco has been an active partner in ICZM projects including the Coastal Area Management Programme (CAMP Morocco) with UN Environment/MAP, the Short and Medium-term Priority Environmental Action Program (SMAP) and Medwetcoast with the EU, and the GEF-financed project, implemented by the World Bank, "Integrated Coastal Zone Management" in the Oriental Region. The ACCMA Project (Adaptation of Coastal zones to Climate Change) under the Climate Change Adaptation in Africa program proposed an action plan for the integrated coastal zones management. There is no specialized research center in Morocco dedicated to ICZM, but universities and research centres include elements of ICZM in their training and awareness actions and programs. Morocco has been very active in ICZM capacity building and awareness raising through training, education, research and international collaboration.

Monitoring - Environmental monitoring is instituted in Morocco by a number of laws and legal provisions for environmental monitoring in the marine environment, including framework law No. 99-12. National Institutions and agencies have the necessary capacities to carry out the analyses required for these monitoring activities. Relevant monitoring programs in Morocco include:

- Sampling for fisheries resources;
- Network quality and safety of the marine environment;
- Network stranding;
- Assessment of the coralligenous and seagrass beds of *Zostera marina* in the marine area of Jbel Moussa;
- National Program for Monitoring the Quality of Bathing Waters;
- Program for monitoring pollution from land-based sources released into the Mediterranean; and
- Monitoring the Osprey population of Al Hoceima National Park.

Surface waters and related ecosystems - The total surface water availability in Morocco is estimated at 18 billion m³ per year of which nearly 8 billion m³ are used. In an average year, surface water supplies amount to a few million cubic meters for the poorest basins: Saharan Basin (25 Mm³), Souss Massa (625 Mm³), Ziz, Guir, Rhéris and Maïder (625 Mm³), and in billions of cubic meters for the most favored basins: Loukkos, Tangérois, Mediterranean Coast (3600 Mm³) and Sebou (5600 Mm³). The preliminary results of an inventory initiated in 2014 and still in progress shows that in the country there are more than 300 wetlands, located both on the coast and in the inland, that are very diverse in terms of their biodiversity. Among these, 24 are Ramsar Sites, covering a total area of about 272,000 hectares. It is estimated that 25% of the surface area of these areas was lost between 1978 and 1999. The siltation of dams is an important constraint to the mobilization of surface water that results in the loss of nearly 75 Mm³ / year. The total loss by siltation is currently estimated at around 1,740 Mm³. This capacity would be of the order of 3 billion m³ in 2030, almost equivalent to the total capacity of projected dams.

Climate projections established by the National Meteorology Directorate, show an increase in temperatures of 2 °C to 5 °C depending on the region, and a decrease in precipitation of between 5% and 50% by the end of the century. Water inflows have already decreased by 20% on average since 1950. In spite of this, the increasing variability of rainfall and extreme weather events have led to more frequent occurrences of floods. Exceptional flooding has been recorded between 2008 and 2011, in particular in the north of Morocco, with 30-year and 100-year flood events. At the same time, several droughts have affected some areas or all of Morocco in recent decades (State of the Environment of Morocco, 2015).

Although wastewater treatment rates in Morocco have significantly increased, from 6% in 2005 to around 77% in 2017 (ONEE, 2018), a significant portion of wastewater is still discharged into the environment without purification. Moreover, fertilizers and organic matter present in surface waters leads to eutrophication making the water unsafe and generating additional costs for treatment to standards for potable water.

Coastal aquifers and related ecosystems - Moroccan Mediterranean coastal aquifers (Figure 27), are relatively small (less than 300 km²), all of alluvial type and mostly unconfined. They are important for the local rural economy and constitute a source of water mainly for agriculture, but also for local domestic water supply and industrial use. The Bou Areg aquifer is connected with the regionally important Nador coastal wetland and related ecosystems. Morocco's high average precipitation (460 mm/yr) ensures elevated recharge rates in aquifers (more than 100 mm/yr).



Figure 27 Main coastal aquifers in Morocco (UN Environment/MAP and UNESCO-IHP, 2015)

An overview of the analysis of the main coastal aquifers in Morocco undertaken for the MedPartnership is provided in Figure 28.

Submarine groundwater discharges - Groundwater discharges to the Mediterranean from coastal aquifers in Morocco are estimated at 20 Mm³/yr.

Policy and legal aspects of water management - In 2016, Morocco adopted a new Water Law (36-15) that defines the rules for an integrated, decentralized, and participatory management of water resources, targeting the sustainable use of water resources and hazards prevention. It builds on the 1995 Water Law (10-95), which gave a rather full framework for the water sector, and aimed at promoting the sustainable management of water resources by basin, through principles such as integrated management, “user-pays” or “polluter-pays” were introduced. However, it left some gaps such as drought or flood management, fee recovery, sanitation, wastewater discharged to the sea and desalination.

The 2016 Water Law reinforces the 1995 legal framework by introducing new provisions for the reuse of wastewater and rainwater, for the protection and preservation of water resources, and for the improvement of protection against climate change. The 2016 Water Law also marks the introduction of advisory boards at the basin level, as well as the implementation of a legal framework for water desalination.

Aquifer name	Nutrients	Other Pollutants	Dependency for Domestic Uses	Links with Ecosystems	Salinization
Bou-areg					
Rhis-Nekkor					
Martil-Alila					
Negro					
Oued Laou					
Smir					



Figure 28 Findings of the analysis of the main coastal aquifers in Morocco undertaken in the MedPartnership (UN Environment/MAP and UNESCO-IHP, 2015)

The protection of groundwater resources is addressed in a dedicated sub-section, under the chapter dedicated to the conservation of water resources. In particular, perimeters of protection can be defined in areas where groundwater exploitation may endanger existing water resources. If needed, restricted areas can be defined, where aquifers are facing overexploitation or where groundwater quality may deteriorate. Additionally, in order to ensure sustainable use and preservation of water resources and its related ecosystems, river basin organizations can conclude participatory management contracts for aquifers or aquifer sections (as well as rivers, portions of river, lakes or portions of lake), in agreement with partners and water users. The participatory management contract shall specify the action plan and the terms and framework of the participation of water users to the management and control of water resources.

Nine basin agencies were established across the entire national territory with considerable responsibilities for surface and groundwater, such as delivering permits and concessions for the development of groundwater. An overview of the most relevant information concerning the national strategy for water resources in Morocco is set forth in Figure 29.

Water policies and strategies	
National strategy for the water sector (adopted in 2009 – currently being revised and extended)	
Main principles and objectives	<p>The three pillars of the national strategy for water are:</p> <ol style="list-style-type: none"> 1. Demand management and enhancing the value of water: more efficient use and water savings in all sectors (drinking water, irrigation, industrial and touristic water) 2. The management and development of water supply: <ul style="list-style-type: none"> · Mobilization of conventional water resources: construction of large and small dams, and interbasin water transfers · Mobilization of non-conventional water resources: desalination of seawater, demineralization of brackish groundwater, reuse of treated wastewater and collection of rainwater 3. Preservation and protection of water resources, natural habitats and fragile zones: <ul style="list-style-type: none"> · Preservation of groundwater resources: governance model, reinforcement of control systems on groundwater abstractions, establishment of protection banning perimeters, and development of artificial recharge of aquifers · Protection of the quality of water resources: sanitation plans and treatment of wastewater, national program of prevention and combatting industrial pollution, implementation of the national plan of the management of domestic and assimilated wastes · Conservation of hydrographic basins, oasis and wetlands; protection of springs, program of protection of wetlands and natural lakes, fight against desertification, protection of the coastline <p>It also establishes accompanying measures, especially:</p> <ul style="list-style-type: none"> · the modernization of information systems and reinforcement of means and competences · Continuation of legal and institutional reforms · Tariff and financing systems

Consideration of groundwater and coastal aquifers	Groundwater is considered as a precious and strategic resource for the supply of domestic water to be preserved and used in the frame of a rational and integrated management which will guaranty its equilibrium and sustainability for future generations.
The legal framework (principles and provisions)	
Water ownership	All water resources are part of the public domain (Water Law no. 10-95 of 1995)
Consideration of groundwater	Groundwaters are ruled by the Water Law (10-95 of 1995)
Consideration of coastal aquifers	None

Figure 29 Overview of policy and legal aspects of water management in Morocco (UN Environment/MAP and UNESCO-IHP, 2015)

Synopsis of priorities and gaps – A coastal population density that is already high (more than 500 inhabitants/km²) and growing is driving coastal aquifer degradation. Other pressures on water resources include the lack of wastewater treatment plants, unregulated water use for irrigation, and the use of fertilizers. Growing salinization of groundwater – often beyond the limits for irrigation - is generalized and mostly linked to excessive extractions and continuing use for irrigation, interactions with saline surface waters (Bou Areg), and locally to seawater intrusion (Nador). Nutrient enrichment of surface water and groundwater is common in both agricultural and urban areas.

Morocco has a strong capacity for the implementation of ICZM, including a very comprehensive legal framework (the Littoral Law) compatible with the Protocol. Barriers, however, remain in the form of administrative fragmentation and the lack of implementation of coastal protection and conservation measures, or the application of restrictions on coastal development. The necessary pre-conditions are mostly in place to deliver ICZM. However, the key weaknesses and gaps lie primarily in the progress towards a national ICZM strategy or plan consistent with the ICZM Protocol and the full adoption and implementation of the Littoral Law. Ground-level implementation and integration remains relatively weak. Lack of legal institutional frameworks for groundwater governance in general, and coastal aquifers in particular, poses serious threats to environmental and socio-economic sustainability in large sections of the coastal zone.

The priorities identified include:

- Developing the National ICZM Strategy/Plan consistent with the ICZM Protocol;
- Preparing regional ICZM plans and their implementation;
- Building capacity for ICZM at the local level;

- Identifying measures to overcome legal/policy/institutional barriers to ICZM;
- Raising awareness needed as a vital prerequisite for successful enforcement and implementation of coastal and water laws and policies;
- Technical assistance for monitoring of coastal indicators; and
- Exchanging best practices in ICZM including the setback implementation.

Relevant UNDAF priorities - In its UNDAF 2017 – 2021, Morocco has designated “Inclusive Sustainable Development” as one of its six expected results, and has identified a number of specific outcomes that can be enhanced through collaboration with the United Nations system, including territorial planning that integrates the principles of sustainable development and the preservation of natural and cultural heritage, and increased equitable access to natural resources and ecosystem services, amongst others. Child Project 2.1 will contribute to these national priorities through activities to promote the sustainable development of the coast and its resources using ICZM instruments, and to enhance the protection and sustainable management of coastal groundwater resources and their related ecosystems. Further contributions to the UNDAF in Morocco will be achieved through the building of institutional capacity on climate change adaptation, marine spatial planning, collection of water data, and the conjunctive management of surface water and groundwater. Finally, gender has been mainstreamed in the activities of the project, including specific actions to promote gender equality and inclusivity.

THE COASTAL ZONE OF TUNISIA

The Tunisian coast stretches over 2,290 km along the Mediterranean Sea, representing about 5% of the entire Mediterranean coast (APAL and UNDP, 2012). The northern coast is rocky with a narrow continental shelf. Along the east coast, the continental shelf is relatively wide and the sandy beaches are extensive. The southern coast along the Gulf of Gabes is characterized by sandy and sandy-muddy bottoms and a gently sloping continental shelf. The overall health of coastal ecosystems in Tunisia can be considered good, except in certain pollution hot spots, especially due to eutrophication. There are several important cities on the Tunisian coast, including the capital city of Tunis and touristic areas such as Hammamet, Tabarka, and Sidi Bou Said.

Coastal urbanization - The percentage of built-up areas in Tunisia within the first 10 km from the coastline increased from 2.8% in 1975 to 7.6% in 2015 (UN Environment-GRID 2017). In the first kilometer, this percentage was 5.6 % in 1975, while in 2015 it was 12.4%. Within the distance of the first 150 meters from the coastline, the percentage of built-up land in 1975 was 4.1%, while in 2015 it was 8.6%. Tunisia increased its initial land-take between 1975 and 2015 by 173% in the first 10 km, by 119% in the first kilometer and by 113% in the first 150 meters from the coastline.

Legal framework - Tunisia signed the ICZM Protocol in 2008 on the occasion of the Conference of Plenipotentiaries on the ICZM Protocol held in Madrid, but it has not yet ratified it. The protection of the coast has, however, been addressed in national legislation since 1995, both through the law related to the Maritime Public Domain delimiting the public domain and identifying uses, enforcement powers etc., and by the establishment of the Tunisian Coastal Protection and Planning Agency (APAL) under the supervision of the Ministry of the Environment. APAL is responsible for implementing the state policy in relation to the protection and management of the Littoral and the Tunisian Maritime Public

Domain to ensure a sustainable and integrated management of the coastline and to meet national and international commitments. The laws do not specifically refer to ICZM or the requirements of the Protocol, however the law establishing APAL refers to environmental protection for specified coastal habitats such as littoral forests, estuaries, marine capes and coastal wetlands. Further legislation established Marine and Coastal Protected Areas (2014), and the Land Use and Urbanism Code (1994). The Constitution of the Tunisian Republic ensures gender equality in representative bodies, including those established for natural resources management issues.

Setback - The Land Use and Urbanism Code forbids development at a distance of less than 100 meters from the limit of the Maritime Public Domain outside areas covered by approved Urban Development Plans.

Institutional framework - APAL has comprehensive powers for the protection and sustainable management of the coast. Tunisia has created a National Commission for Sustainable Development (1993), and the Council of Ministers has an inter-ministerial coordination function for sustainable development. A “Sustainable Development and Rights of Future Generations Commission ” is authorized by the 2014 new Constitution but not yet implemented.

Inter-ministerial coordination - Although there is no institution or body with the legal duty for coordination of ICZM, national committees have been established by decree of 2014 and 2017 for Management Plans Elaboration of Marine and Coastal Protected Areas. Furthermore, APAL convenes an Advisory Committee of several ministries as a mechanism for ICZM.

Planning and ICZM - A national strategy for ICZM in Tunisia is being prepared in the framework of the project “Addressing climate change vulnerabilities and risks in vulnerable coastal areas of Tunisia” (GEF/UNDP) (2014 - 2020). Furthermore, the project foresees the preparation of local ICZM strategies in two pilot areas, namely Ghar El Melh and Jerba. In the context of this project, an “Assessment study on women’s needs” has been carried out in coastal pilot zones (2015). Tunisia has a trilateral agreement with Algeria and Libya concerning the joint management of the shared Northern Western Sahara Aquifer involving technical and institutional coordination.

Monitoring - The requirements for environmental monitoring in Tunisia are codified in texts relating to the management of natural resources and to the preservation of the environment : The Water Code (Law No. 75-16); Regulations on discharges into the receiving environment (Decree No. 85-56 of 2 January 1985 and Decree No. 94-1885 of 12 September 1994); The conservation of species and natural habitats (Forest Code which was promulgated as early as 1966); The protection of the coastline and the control of the land use in the coastal zone (Code of town and country planning promulgated by Law 94-122 of 28 November 1994); The management of the Public Maritime Domain (Law no. 95-73 of

24 July 1995, as modified by the law no. 2005-33 of 4 April 2005); The Law on the Protection of Agricultural Land (Law No. 83-87 of 11 November 1983); Environmental Impact Studies (Law 88-91 of 2 August 1988 establishing the National Agency for the Protection of the Environment (ANPE) and amended by Law No. 92-115 of 30 November 1992).

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Although environmental monitoring networks are not very developed in Tunisia, numerous initiatives have been implemented for monitoring aspects related to marine and coastal environments:

- National Monitoring Program for the Quality of the Marine Environment (MEDPOL Network);
- National Network for Monitoring the Production and Marketing Conditions of Bivalve Mollusks;
- National Water Quality Monitoring Network (COPEAU);
- Coastal Observatory hosted within APAL;
- Tunisian Observatory for Environment and Sustainable Development (OTEDD); and
- National Network of Stranding in Tunisia.

Surface waters and related ecosystems - The country has more than 256 wetlands, including 40 Ramsar Sites. The majority are in the north of the country, especially near the coast. At the end of 2016, Tunisia had 36 dams with a total holding capacity of 2,239 Mm³. The siltation of dams is an important constraint to the mobilization of surface water that has resulted in the loss of 20% of the original dams' capacity. Water pollution from nitrates and pesticides is another important concern, resulting from the improper use of mineral fertilizers and phytosanitary chemicals in agriculture. Furthermore, the significant interannual rainfall variability results in extreme events, either prolonged droughts or large floods.

Recent climate projections carried out by Tunisia's National Institute of Meteorology indicate a decline in precipitation of between 5% and 20% by 2050 depending on the region, with further decreases of between 10% and 35% anticipated by 2100. At the same time, temperatures are expected to rise between 1.2 °C and 2.3 °C by 2050 and between 2.9 °C and 4.3 °C by 2100, depending on the region. Pressures on water resources are therefore expected to intensify, driven on the one hand by rising temperatures and increased human consumption of water resources, and on the other hand by the anticipated reduction in precipitation. In the coming years, this will worsen structural water stress in Tunisia, where it is estimated that conventional water resources will decrease by 28% by 2030.

Coastal aquifers and related ecosystems - The area covered by coastal aquifers in Tunisia (Figure 30), is about 25,000 km² or nearly 15% of the total area of the country. Tunisian coastal aquifers vary greatly in size and are mostly contained in quaternary formations of sand and sandstone deposits in both confined and unconfined states. Agriculture accounts for the dominant use of groundwater from both shallow and deep aquifers. In shallow aquifers, agriculture is the only consumer of groundwater, while in some deep aquifers there is also a small amount of groundwater used for drinking water. Shallow coastal aquifers are strongly related to the Mediterranean Sea and salty marshes.

Annual rainfall varies greatly from one region to another, from 500 – 800 mm/yr in the north to 50 – 100 mm/yr in the south. About half of all shallow coastal aquifers are characterized as over-extracted. Groundwater levels have been monitored since the 1950s while monitoring for groundwater quality (salinity, nitrogen compounds) began in 1998. An overview of the analysis of the main coastal aquifers in Tunisia undertaken for the MedPartnership is provided in Figure 31.



Figure 30 Main coastal aquifers in Tunisia (UN Environment/MAP and UNESCO-IHP, 2015)

Aquifer name	Nutrients	Other Pollutants	Dependency for Domestic Uses	Links with Ecosystems	Salinization

Chegarnia-Sidi Abicha-Oued El Khairat					
Côte orientale					
Gabes Shallow					
Grombalia					
Mahdia-Ksour Essaf-Sidi Alouane					
Mornag					
Ras Jebel					
Sahel de Sfax Deep					
Sahel de Sfax Shallow					
Tabarka					

Level of concern

Very low

Low

Medium

High

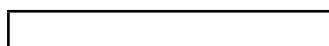


Figure 31 Findings of the analysis of the main coastal aquifers in Tunisia undertaken in the MedPartnership (UN Environment/MAP and UNESCO-IHP, 2015)

Submarine groundwater discharges - No official estimates of submarine groundwater discharges from Tunisia's coastal aquifer are available.

Policy and legal aspects of water management - Tunisia adopted in 1975 a Water Code that has been amended in 1995 and its revision is ongoing. The Water Code has rather exhaustive provisions and which reserves an important part for the consideration of groundwaters. The Water Code includes considerations of the impact of climate change on water resources and ecological uses such as wetlands. The Ministry in charge of the environment is currently elaborating an environmental code. The code deals, inter alia, with the

sustainable management and the preservation of groundwaters. An overview of the most relevant information concerning the legal framework for water resources in Tunisia is set forth in Figure 32.

Water policies and strategies:	
The National Strategy for the Protection of Groundwaters (2010-2014)	
Main principles and objectives	Efficiency, sustainability, and preservation of groundwaters with an improved management of conventional water and reinforcement of the fight against pollution.
Consideration of groundwater and coastal aquifers	The strategy deals with groundwater.
The legal framework (principles and provisions)	
Water ownership	Water is part of the public domain (Water code). The Tunisian constitution guaranties the right to water (article 44)
Consideration of groundwater	Groundwaters are considered by the Water Code
Consideration of coastal aquifers	None

Figure 32 Overview of policy and legal aspects of water management in Tunisia (UN Environment/MAP and UNESCO-IHP, 2015)

Synopsis of priorities for action and gaps - Major concerns include degradation of coastal aquifers due to seawater intrusion and reductions in borehole yields that are widespread and severe. There are also some local but severe cases of polluted water being drawn into aquifers.

The regulatory and institutional frameworks for sustainable development, spatial planning and the integrated management of the coast are fairly well developed, with clear mechanisms for and experience of institutional coordination. Tunisia is unique in that it has an agency (APAL) with wide ranging statutory duties relating to the management of the coast and well developed scientific capacity. The landward limits of the coast and specific coastal ecosystems are well defined, but pre-date the ICZM Protocol. The necessary pre-conditions are therefore mostly in place to deliver ICZM. However, the key weaknesses and gaps lie primarily in the lack of an up-to-date approved national ICZM strategy, further ground-level implementation, and the integration with surface water and aquifer management. Lack of legal institutional frameworks for groundwater governance in general, and coastal aquifers in particular, poses serious threats to environmental and socio-economic sustainability in large sections of the coastal zone.

The priorities identified include:

- Ratifying the ICZM Protocol;
- Updating national legislation where necessary to fully transpose the ICZM Protocol;
- Preparing a national ICZM strategy along with regional/local ICZM plans and their implementation;
- Raising awareness and building capacity needed for successful implementation and enforcement of coastal and water laws and policies;
- Technical assistance for monitoring of coastal indicators;
- Support for the management of transboundary groundwater with neighboring states.

Relevant UNDAF priorities – In its UNDAF 2015 – 2019, Tunisia declares as one of its four priorities the creation of an inclusive, sustainable and resilient economic model, and cites a number of environmental challenges that must be addressed to achieve this new economic model, including the sustainable, efficient and inclusive management of natural resources. Child Project 2.1 will contribute to these priorities through activities to promote the sustainable development of the coast and its resources using ICZM instruments, and to enhance the protection and sustainable management of coastal groundwater resources and their related ecosystems. Further contributions to the UNDAF in Tunisia will be achieved through the building of institutional capacity on climate change adaptation, marine spatial planning, collection of water data, and the conjunctive management of surface water and groundwater. Finally, gender has been mainstreamed in the activities of the project, including specific actions to promote gender equality and inclusivity.

Summary of legal aspects related to water resources management

Sub-regional summaries of the key legal aspects concerning water resources and considerations for groundwater are set forth in Figure 33 for the Adriatic sub-region and Figure 34 for the Southern and Eastern sub-region.

Legal framework	Adriatic countries		
	Albania	BiH	Montenegro
Water ownership	State	State	State
Groundwater consideration	Under Water Law(s)	Under Water Law(s)	Under Water Law(s)
Specific provisions for coastal aquifers	No	No	Law on Public Maritime Domain covers submarine springs and near-shore wells
Basin management	Yes	Yes	Yes
Planning instruments	IWRM	Water management strategy	Water management strategy, ICZM Strategy

Regulations on groundwater abstractions	Yes	Yes	Yes, except for “general”** uses
Regulations on groundwater quality	Yes	Yes	Yes
Sanitary protection zones (wells, springs, aquifers)		Yes	Yes
Ratification of ICZM Protocol	Yes		Yes

Figure 33 Legal aspects: summary of main findings on present conditions (Adriatic countries)

* For households, bathing and recreation, from first aquifer.

** i.e. without use of any equipment or construction information provided by country. GW, groundwater. Grey cells: no information provided by countries; white cells: yes; orange cells: no.

	Southern and Eastern Mediterranean countries					
	Algeria	Egypt	Lebanon	Libya	Morocco	Tunisia
Legal framework						
Water ownership	State	No information	State	State	State	State
Groundwater consideration	Under Water Law(s)	Under Water Law(s)		Under Water Law(s)	Under Water Law(s)	Under Water Law(s)
Specific provisions for coastal aquifers	No	No	No	Prohibition (Decree 791/1982) of any new GW abstraction in coastal aquifers	No	No
Basin management	Yes			Yes	Yes	
Planning instruments	Executive Decree		National Water Strategy		National Water Plan	
Regulations on groundwater abstractions	Yes	Yes ***	Yes	Yes	Yes	Yes
Regulations on groundwater quality		Yes	Yes	Yes	Yes	Yes

Sanitary protection zones (wells, springs, aquifers)	Yes				Yes	Yes
Ratification of ICZM Protocol		Yes	Yes		Yes	

Figure 34 Legal aspects: summary of main findings on present conditions (Southern and Eastern Mediterranean countries)

*** Permission required for drilling water wells and installing pumps. Grey cells: no information provided by countries; white cells: yes; orange cells: no.

Interministerial Coordination Mechanisms in the participating countries

At present, mechanisms for interministerial coordination (IMC) on integrated coastal zone management (ICZM) and water resources management exist in some, but not all, of the nine countries participating in Child Project 2.1. An overview of the existing and anticipated coordination mechanisms on ICZM and water resources management is set forth in Table 3.

In terms of ICZM, Interministerial Committees were established in Algeria and Montenegro as a result of the MedPartnership. These committees are functioning, and Child Project 2.1 will make use of them. Child Project 2.1 will reinforce or initiate the creation of interministerial committees on ICZM in four additional countries: Bosnia and Herzegovina, Egypt, Lebanon and Tunisia. At present, no interministerial coordination mechanisms exist in Albania, Libya and Morocco, since in these countries coastal management is still heavily influenced by sectoral administrative boundaries and mostly left to the lower level of governments.

In Algeria, the IMC for ICZM established in the MedPartnership Project involves 8 Ministries, including 1 representative from the Direction of strategic and budget planning. In Montenegro the IMC for ICZM established in the MedPartnership Project involves 9 Ministries, including the Ministry of Economy. In addition, in both countries, representatives of regional government, and different institutes dealing with the coastal management are involved.

Table 3: Existing mechanisms for Interministerial Coordination

	Existing/anticipated mechanisms for Interministerial Coordination	
Country	<u>Coastal zone management</u>	<u>Water resources management</u>
Albania	MAP System National Focal Points	IHP National Committee
Algeria	IMC for ICZM established in the MedPartnership	IHP National Committee
Bosnia and Herzegovina	Child Project 2.1 will support the launch of IMC for ICZM	None
Egypt	National Steering Committee for ICZM	IHP National Committee

Lebanon	Child Project 2.1 will support the launch of IMC for ICZM	IHP National Committee
Libya	None	IHP National Committee
Montenegro	IMC for ICZM established in the MedPartnership	None
Morocco	National Commission for Integrated Coastal Management	IHP National Committee
Tunisia	Child Project 2.1 will support the launch of IMC for ICZM	IHP National Committee

In the case of Albania the 2014 Law on Territorial Planning and Development and the NSDI II (2016) contain provisions for institutional coordination at national, regional and local levels. Appropriate efforts will be taken during the execution of Child Project 2.1 to build on and to expand these existing mechanisms by using the entry point provided by the MAP system Focal Points.

In the case of Libya, due to the current situation in the country, it is not possible to commit to the creation of an IMC mechanism on ICZM. However, appropriate efforts will be taken during the execution of Child Project 2.1 to build on existing mechanisms, if any, to support Libya with the implementation of the ICZM Protocol and its policy instruments.

In the case of Morocco, the Littoral Law approved in 2015, requires that the National Coastal Plan (PNL) and the Regional Schemes be submitted to the Commission for approval. Child Project 2.1 will rely on this governance mechanism to support Morocco with the implementation of the ICZM Protocol and its policy instruments

Interministerial coordination on water resources for the activities of Child Project 2.1 will be achieved through the National Committees established by governments for UNESCO's International Hydrological Programme, which is the executing partner for the corresponding activities of this Child Project. The IHP National Committees are constituted and run under the authority of national governments (involving the Ministries responsible for water resources) and play a critical role in the implementation of the IHP's programme of work. At present, IHP National Committees are established in seven of the nine participating countries of Child Project 2.1: Albania, Algeria, Egypt, Lebanon, Libya, Morocco and Tunisia. In the remaining two countries – Bosnia and Herzegovina and Montenegro – efforts will be taken to address water resources issues through the coordination mechanisms on ICZM that exist or that will be created presently in these countries. Moreover, efforts will be made to involve key line ministries the institutions which has responsibility of planning and finance in each country.

For both activities under component 1 and component 2 the countries' nominated national project focal points will be involved interministerial coordination related processes.

3) THE PROPOSED ALTERNATIVE SCENARIO

The Mediterranean Sea Program - Enhancing Environmental Security: Rationale and Framework

The MedPartnership and ClimVar & ICZM GEF projects have enriched the knowledge on the Mediterranean environment, unraveled the implications of climate change and variability and the importance of coastal aquifers; strengthened countries' mutual trust, cooperation and common purpose; consolidated the partnership among countries, UN bodies, civil society organizations (CSOs), bilateral donors and the EU; tested on the ground the feasibility and effectiveness of technical and policy instruments aimed at addressing major present and future threats to environmental sustainability and climate related impacts. Alongside and thanks to these GEF funded support actions, UN Environment/MAP, at the request of the Contracting Parties to the Barcelona Convention, has developed a comprehensive regional policy framework including strategies, plans and guidelines that will serve as guidance for the regional and national efforts in the Mediterranean for the years to come.

The update of the National Action Plans (NAPs) for the implementation of the LBS Protocol of the Barcelona Convention and its Regional Plans in the framework of the Strategic Action Programme to address pollution from land-based activities (SAP-MED), and preparation process succeeded in creating momentum at local, national and regional levels, with a remarkable level of involvement and participation of all stakeholders. In each country, national and local authorities, the industrial sector and NGOs discussed priorities, possible actions and opportunities for investment, thus making the NAPs a realistic initiative.

These remarkable achievements, while not yet bringing about measurable changes in the levels of environmental stress or in degradation trends, have however created the indispensable foundation and the enabling conditions for initiating national actions targeting major causes of marine and coastal transboundary degradation. The task is now to confront the challenge of implementation, thereby achieving concrete and lasting results.

The stage of assessments, diagnostics, priority setting, planning and experimentation having been completed, a higher level of effort is now required at the national and regional levels. This renewed and expanded effort is not only justified by the continuing degradation of the Mediterranean coastal zone and shallow marine environments, but also urgent in view of the looming climate related threats, and of the loss of livelihoods and dramatic deterioration of social conditions along critical sections of the Southern and Eastern Mediterranean shores.

To address this multiplicity of threats, countries have joined efforts and obtained further GEF support through the Programmatic Approach funding modality. The “Mediterranean Sea Programme: Enhancing Environmental Security”, approved by the GEF Council in 2016 aims to assist GEF beneficiary countries of the Mediterranean Basin to rise to this challenge and step up their efforts and commitments, including those financially related.

The term “environmental security”, used in the title of the proposed Programme to capture its overall perspective and goal, embraces three categories of concerns:

- Concerns about the adverse impact of human activities on the environment; the emphasis here is on the security of the environment as a good in itself, for the sake of future generations, as the context for human life.
- Concerns about the direct and indirect effects on national and regional security of various forms of environmental change (especially water scarcity and degradation), which may be natural or human-generated; here the focus is on environmental change triggering, intensifying or generating the forms of conflict and instability relevant to conventional security.
- Concerns about the insecurity that individuals and groups (from small communities to humankind) may experience due to environmental change such as water scarcity, air pollution, climate variability and change.

The current situation of the Southern and Eastern shores of the Mediterranean shows all the signs of progressive deterioration of environmental security as a consequence of complex and interlinked factors. Among them, the loss and degradation of coastal and shallow marine ecosystems and of the scarce freshwater resources, compounded by the increasing negative impacts of climate variability and change, play an important role in determining social instability and political volatility. The presumption underlying the Programme design and its seven Child Projects (CPs) is that overall environmental security, including the sustainability of the livelihoods of growing coastal populations and their resilience to the adverse impacts of climate change and variability, will be improved by:

- reducing nutrient pollution and habitat degradation in coastal hot spots (CP 1.2, 1.3);
- contributing to the improved health of humans and ecosystems through the elimination of persistent toxic substances in hot spots (CP 1.1, 1.2., 1.3);
- implementing ICZM and introducing conjunctive surface and groundwater management in the coastal zone, thereby protecting coastal groundwater-related ecosystems (CP 2.1);
- promoting the nexus planning approach to reconcile conflictive coastal resources uses (CP 2.2);

- protecting coastal/marine biodiversity (CP 3.1).

Child Project 2.1 “Mediterranean Coastal zones: Water Security, Climate Resilience, and Habitat Protection”: Rationale

Child Project 2.1 of the MedProgramme addresses Mediterranean coastal zones where the most pressing climate-related and sustainability concerns are concentrated, and where most marine degradation originates. It is aimed at achieving positive impacts in the following domains:

- Sustainability of the coastal zone resources in beneficiary countries through the expanded compliance with the ICZM Protocol, the adoption of national ICZM strategies, coastal plans and instruments, and improved gender equality;
- Resilience to climatic variability and change and water security of coastal populations through improved sustainability of services provided by coastal aquifers and by groundwater-related coastal habitats; and
- Effectiveness, long-term sustainability and replication potential of project results by sharing experiences and lessons learned in and among countries, and full integration of gender consideration.

The project purpose is to assist countries, in particular coastal zone managers and populations, in adapting to evolving climatic conditions threatening the sustainability of the freshwater supply, and introducing land use policies and development practices respectful of the diverse Mediterranean coastal zones characteristics: intrinsic vulnerabilities, natural and cultural functions, freshwater-seawater interactions; and geological processes: from karstic, to flood plain, to fluvial- deltaic, to barrier-strandplain. By promoting gender equality principles in coastal zone management practices and policies, and mainstreaming gender consideration in all its activities, the project will improve effectiveness and sustainability of integrated coastal zone management in the Mediterranean region.

Diagnostic studies and assessments developed with GEF support by the Barcelona Convention parties (MedPartnership), pointed to three major environmental and socio-economic degradation processes affecting the Mediterranean coastal regions and the marine environment:

- disruption of coastal zone natural processes due to coastal urbanization and other human activities, and to changing climatic conditions causing erosion, diminished groundwater recharge, loss of ecosystem resources;
- widespread salinization and degradation of coastal aquifers – strategic freshwater resources sustaining coastal populations and habitats – due to over-exploitation, pollution from inadequate land use practices, seawater intrusion, and climatic extremes; and
- loss of ecosystem services provided by major coastal wetlands, lagoons and humid zones due to anthropogenic alterations of the seawater-freshwater interface, excess sedimentation, and eutrophication with consequent deterioration of local livelihoods, biodiversity, and the shallow marine environment.

To reverse these degradation trends, Child Project 2.1 will apply the tools and scale up the approaches developed by MedPartnership, summarized below:

- Morocco - Nador Lagoon and Bou Areg aquifer: [Hydrogeochemical assessment of the effects of human pressure on coastal groundwater quality for the development of water management strategies.](#)
- Croatia - Novljanska Zrnovnica karstic spring and Pula coastal aquifer: [Coastal aquifer vulnerability mapping](#)
- Tunisia – Ghar El Melh coastal aquifer and lagoon: [Vertical and horizontal groundwater vulnerability mapping](#)

- Albania and Montenegro – Buna/Bojana delta and coastal plain: Joint ICZM and IWRM Plan, integrating Groundwater/Aquifers (Integrative Methodological Framework – IMF)
- Algeria – Reghaia Coastal zone: Coastal Zone Plan: ICZM Plan Integrating Groundwater/Aquifers
- Lebanon - Deir El-Nouriyeh-Cliffs of Ras Ech-Chekkaa and Tyre Beach Natural Reserve: Assessment of the impacts of climate change on water resources and coastal wetlands
- Algeria, Croatia and Montenegro: Support in the preparation of National ICZM Strategies
- Lebanon and Syria – Orontes/Assi River: Advancing IWRM planning at the river basin level in the East Mediterranean

Theory of Change

In line with the MedProgramme design principles, architecture and objectives, the design of the project assumes that by supporting and accelerating selected countries' action in defining, through highly participatory processes, and implementing integrated land and water coastal zone management strategies and plans and coastal aquifer management plans, the project will advance coastal freshwater ecosystem integrity, water security of coastal populations, habitat protection, rational use of coastal lands and seascapes, diversified and climate-resilient coastal development, and gender equality.

The Theory of Change (Figure 35) informing the project design builds on the notion that if the coastal zones are protected through management plans respectful of the coastal habitats and ecosystems; if priority coastal aquifers are sustainably managed and/or protected from seawater intrusion; if land uses in priority coastal zones are regulated respecting their intrinsic vulnerabilities and natural characteristics including coastal environmental and geological processes; if transboundary cooperation will ensure harmonization of policies and of monitoring procedures, then the coastal populations along the southern and eastern Mediterranean shores will benefit from improved health conditions, more stable livelihoods, gender equality and enhanced resilience to climatic change and variability. A summary of the expected achievements of the project is set forth in Table 4.

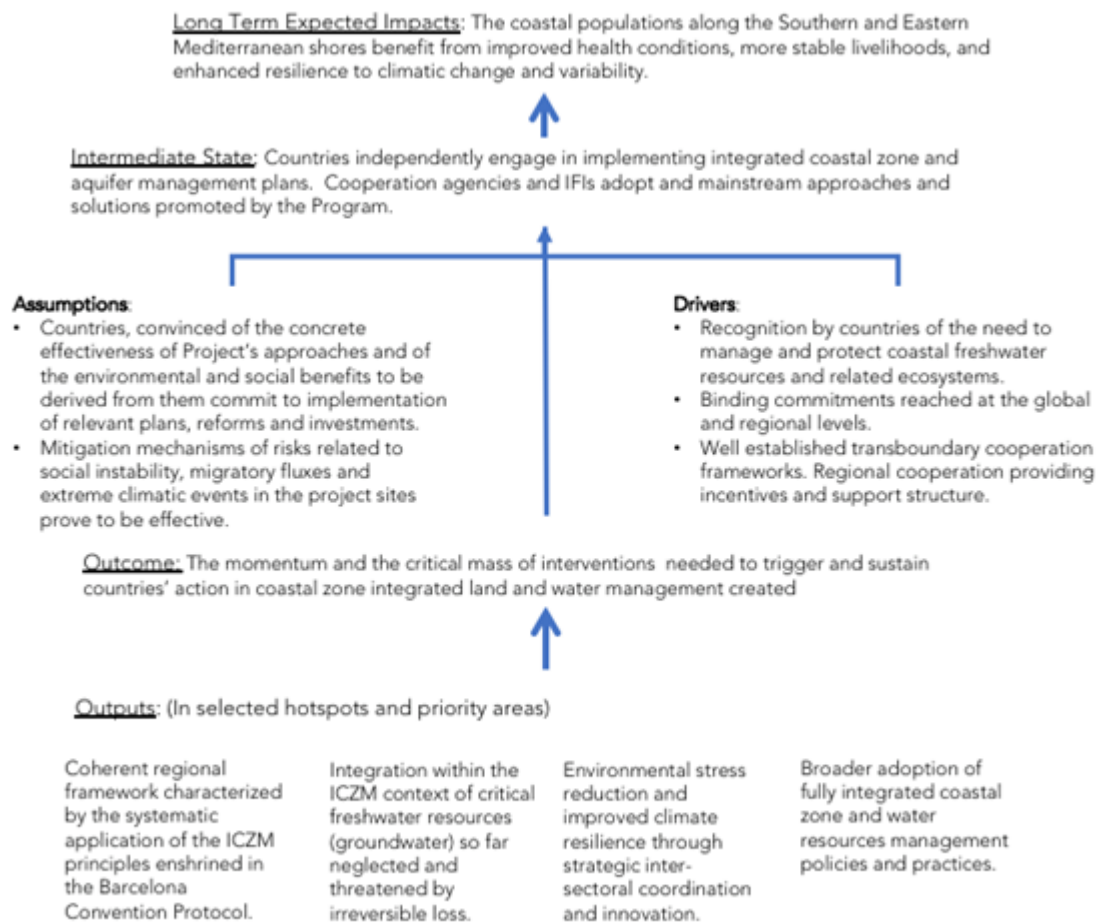


Figure 35 Child Project 2.1 Theory of Change: From outcomes to impacts

Table 4: Summary of Expected Project Achievements

Objectives	Targets	Outputs
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Strengthening and expansion of Integrated Coastal Zone Management in the Mediterranean region	At least 12,500,000 hectares of coastal landscapes and seascapes under improved management	<p>1 ICZM National Strategy submitted for adoption (Egypt)</p> <p>1 ICZM National Strategy and 1 Integrated Management Plan including consideration of IWRM and coastal groundwater (IMF approach) submitted for adoption (Lebanon: Damour)</p> <p>2 ICZM Plans submitted for adoption (Morocco: Tanger-Tétouan- Al Hoceima Area and in Montenegro: Boka Kotorska Bay area [Boka Bay])</p>
	ICZM Protocol ratification process under way in three additional countries	<p>Proposals for Inter-ministerial approaches discussed with the relevant authorities in four project countries</p> <p>3 Sub-regional (Adriatic, Southern and Eastern Mediterranean) trainings in support of ICZM Protocol implementation</p> <p>5 national consultations in support of ICZM Protocol ratification</p>
	Reinforced awareness and capacity of countries in the implementation of comprehensive ICZM policies and practices	<p>MedOpen course linked with other similar courses dealing with integrated approaches</p> <p>Yearly advanced virtual training course during the project implementation period</p> <p>300 stakeholders trained on ICZM, Maritime Spatial Planning (MSP) and Climate Variability and Change (CVC) adaptation</p> <p>New promotional materials developed for awareness campaigns on yearly basis during the project implementation period</p> <p>1000 persons attend or exposed to awareness raising events</p>
Improving sustainability of services provided by coastal aquifers and by groundwater-related coastal habitats	Five high priority coastal aquifers and related ecosystems under improved conjunctive surface and groundwater management	<p>Management Plans produced for 5 priority coastal aquifers, and submitted for adoption by local/national governance entities:</p> <ul style="list-style-type: none"> · Albania and Montenegro – Buna-Bojana transboundary coastal aquifer · Egypt – North West coastal aquifer · Lebanon – Damour coastal aquifer · Morocco – Rhiss-Nekkor coastal aquifer · Tunisia – Ras Jebel coastal aquifer <p>Monitoring networks and protocols designed and field tested and trainings conducted for all 5 priority aquifers.</p>

	Submarine Groundwater Discharges Assessments	Completed for all project countries
	Reinforced awareness and capacity of countries in the implementation of conjunctive surface and groundwater management	3 Sub-regional (Adriatic, and South, Central and Levantine Basins) conjunctive surface and groundwater management stakeholders' training modules implemented 5 National Dialogues to identify potential conjunctive management solutions

The project consists of two Components:

Component 1: Coastal Zone Management

ICZM and the IMF

In recent decades, parallel management approaches have been developed to respond to societal impacts on the terrestrial, freshwater and marine environments in the Mediterranean basin. These include ICZM (Integrated Coastal Zone Management), IWRM (Integrated Water Resources Management), and more recently Coastal Aquifer Management. Their focus has been most acute in coastal areas and in the management of the key resource - water - with the potential for overlap, the duplication of resources, and a lack of coherence in policies, strategies and actions. Management approaches have become more complex, often resulting in less, rather than more, clarity. In order to overcome these negative potentials and instill simplicity, the Integrative Methodological Framework (IMF) was developed through a joint initiative by the Global Water Partnership (GWP Med), the Priority Actions Programme/Regional Activity Centre (PAP/RAC) of UN Environment/MAP, and the UNESCO International Hydrological Programme (IHP). Its purpose was to merge the three management approaches in such a way that 'the whole is greater than the sum of the parts'. The resulting IMF is a comprehensive, comprehensible, and an operational methodology for the integrated and sustainable management of the Mediterranean ecosystems constituted by the coastal zones, river basins and coastal aquifers (Box 1).

The methodology is described in, "An Integrative Methodological Framework (IMF) for coastal, river basin and aquifer management - towards converging management approaches for Mediterranean coastal zones" [\[1\]](#) (2015). The IMF was prepared under the direction of international experts with extensive experience in their respective fields across the Mediterranean region and globally. This document was a major contribution of the Global Environmental Facility (GEF) supported MedPartnership project.

This IMF was operationally tested in the development of a number of coastal plans: the Integrated Resource Management Plan for the Buna/Bojana Area (Albania/Montenegro), the Coastal Plan for Reghaïa (Algeria), the ICZM/IWRM plan in Awali River and coastal area (Lebanon), and the Coastal Plan for the Šibenik-Knin County (Croatia). At its core the IMF consists of a simplified and easily transferable five-stage planning process. The five stages carry the planners and stakeholders from the basic foundation stage of scoping, agreeing on geographic boundaries and stakeholders etc., developing the shared vision, through to the development of the plan or strategy, and its realization through actions. Its strengths lie in its focus on outcomes leading to sustainability, its conceptual simplicity, and its universal transferability.

The triggers for the initiation of this process may be different, these could include; legal requirements (such as the ICZM Protocol, WFD norms or some other international or national legal requirements); escalation of a problem or problems in need of solution; new developments representing opportunities for more sustainable approaches; or opportunities provided through international donors, etc.

Progress towards the ICZM Protocol in the Target Countries

Of the target countries, only four (Albania, Lebanon, Montenegro and Morocco) have currently ratified the ICZM Protocol. However, formal ratification of the Protocol is not in itself a simple indicator of progress towards ICZM.

[1] UNEP/MAP-PAP/RAC, GWP-Med and UNESCO-IHP, (2015). An Integrative Methodological Framework (IMF) for coastal, river basin and aquifer management. Strategic Partnership for the Mediterranean Sea Large Marine Ecosystems (MedPartnership). Split, Croatia.

Box 1 An Integrative Management Framework (IMF) for land, river basin and aquifer management in the coastal zone

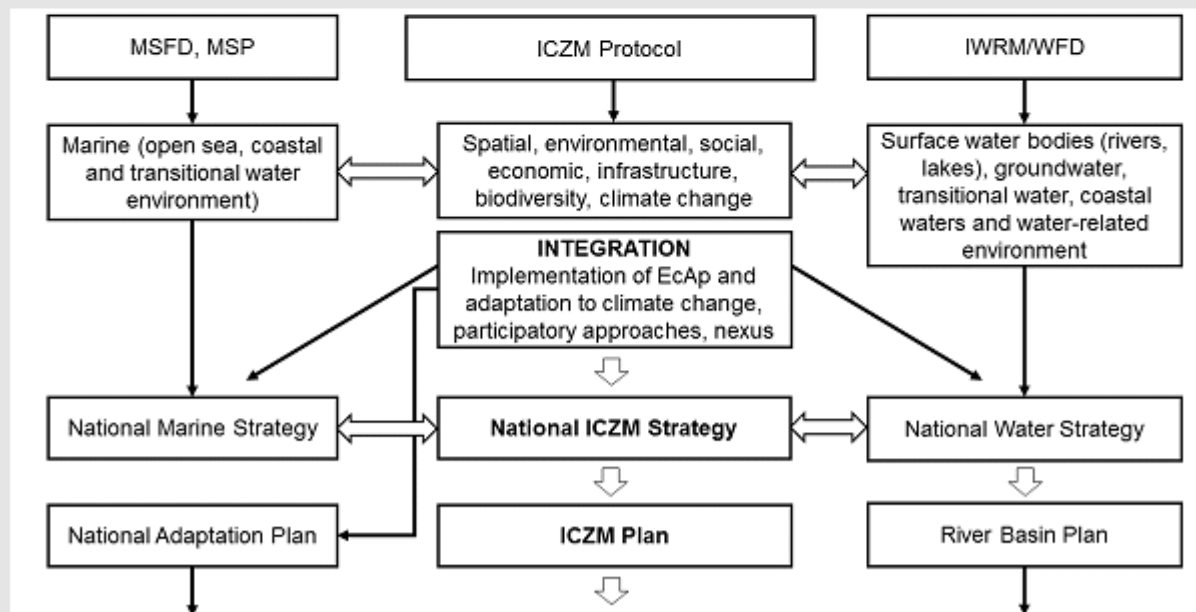
The IMF was developed within the GEF UNEP/MAP MedPartnership project as a tool to promote integrated approaches for implementation of the SAPs and NAPs. The IMF and its operational guidelines – produced by GWP-Med, PAP/RAC and UNESCO-IHP – are intended to:

- identify possibilities and solutions for converging coastal, river basin, aquifer and groundwater management, considering also the implementation of the ecosystem approach;
- integrate climate change considerations as cross-cutting issues throughout the planning and implementation processes in coastal zones; and
- support an active involvement of stakeholders and of the general public in the planning and management of coastal zones.



(a) The coastal zone showing the ICZM Protocol boundaries, groundwaters and waters defined by the Water Framework Directive (WFD) (Credit: Brian Shipman, PAP/RAC)

The IMF identifies the key sectoral and spatial dimensions within which integration must be defined and sets out the methodology to achieve this. The methodology was applied to the development of ICZM plans in three coastal areas in the MedPartnership, to demonstrate the simultaneous consideration of marine spatial planning, ICZM, integrated water resources management and climate change adaptation in the development of truly integrated management plans for Mediterranean coastal areas.



All the countries have existing legislation, such as setback zones and spatial planning that are compliant with or complementary to the requirements of the Protocol. Similarly, practical implementation, such as coastal agencies, plans and strategies are compliant with or complementary to the various Articles of the Protocol. Where ratification has taken place, the transposition of the Protocol into domestic law and its implementation also varies from country to country.

The recent history of many of the target countries has been characterized by political changes and instability. Despite these instabilities, existing legal frameworks and expertise exist on which to build a foundation for ICZM. In the Balkans, ICZM progress has been accelerated by the impending or potential accessions to the EU. All target countries with the exception of Libya have worked closely with PAP/RAC and other Mediterranean focal centers to build capacity and to implement ICZM projects.

Although therefore the overall picture of progress towards the implementation of the Protocol is uneven, the desire to progress and implement the Protocol is broadly positive across the target countries, the main obstacles being the lack of financial and human resources.

The radar diagram in Figure 36 indicates the mean overall baseline of progress across the target countries. The scale of 1-4 Orders is based on the measure of “Orders of Outcome” framework originally developed by the US Environmental Protection Agency, and has been expanded and further developed for assessing the impacts of integrated coastal management (Olsen, 2003) and integrated coastal and watershed management. The orders below have been assessed as a baseline for each of the target countries.

- The First Order looks at the outcomes necessary to create an enabling framework for ICZM - the preconditions required to successfully prepare and implement. Generally, these will be related to governance, such as the legal, policy and governance structures (e.g. primary legislation, guidance, implementing authorities, management bodies etc.) in place.
- The Second Order assesses changes in behavior of target user groups and key institutions with respect to the coastal areas and their resources that occur during the implementation of ICZM.
- The Third Order considers practical results and benefits of an ICZM plan and/or its process. Simply, are there measurable outcomes such as improved quality, reduced conflicts, more efficient financial investment, and sustainable levels of exploitation of individual resources?
- The Fourth Order looks at the extent to which ICZM has contributed to the sustainable development of the coastal environment and its resources. This can be summarized as the “tipping-point” at which the “push” of ICZM as a means of resource management moves to the “pull” of ICZM as standard practice. These are likely to be more long-term, high-level in nature, integrated with ecosystem-based approach objectives - embedding the outputs of the preceding Orders as Outcomes.

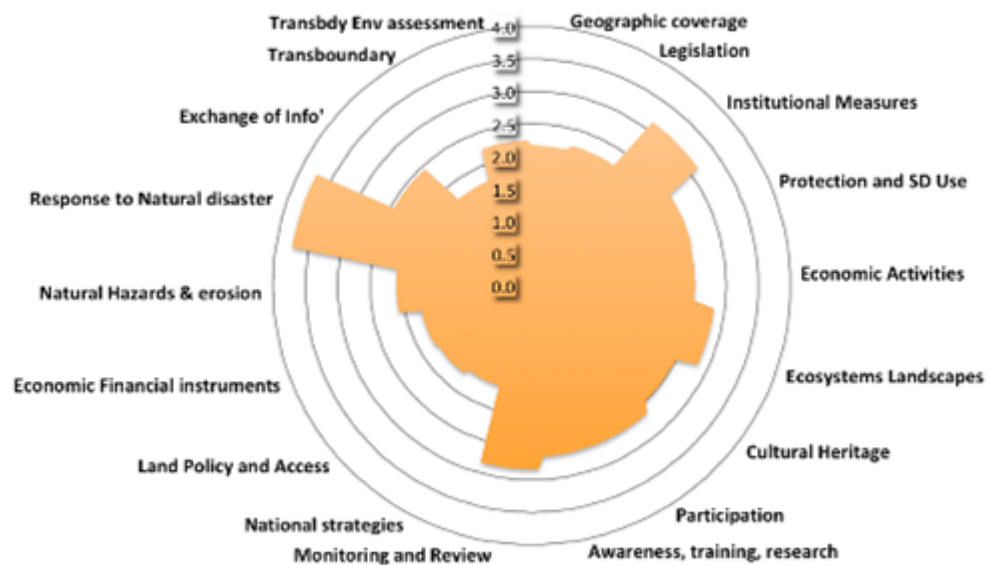


Figure 36 Mean overall baseline of progress across the target countries of Child Project 2.1, with respect to integrated coastal management and integrated coastal and watershed management

The broad picture across the target countries can be summarized as follows:

- Basic building blocks for environmental protection, in terms of institutions and legislations are largely in place. The protection mechanisms for ecosystems and landscapes in the form of protected areas are relatively well developed, and all countries are signatories to the numerous international environmental conventions. However, the quality of enforcement/implementation is not measured here.
- Institutional coordination in coastal management varies considerably across the countries; ranging from closely integrated under the direction of a central ICZM or sustainability committee, to the traditional “silo” sectoral structures.
- Many countries see spatial planning as a key tool to help achieve ICZM, however this field is generally undeveloped or poorly implemented.
- In contrast to environmental protection, the level of positive practical management and intervention is low. There have been numerous ICZM projects, many of which were carried out in partnership with international agencies and programs including MedPartnership. As projects these activities were however time limited, and the degree to which their outcomes were embedded is not quantified. They provide however a baseline experience in which innovative methodologies were piloted and awareness raising approaches were tested.
- Most countries recognize the need for, or have plans for, coastal adaptation to climate change, and for disaster response.

- One country (Montenegro) has fulfilled the requirement for a national ICZM strategy. Egypt has prepared a draft strategy in 2010. Furthermore, preparatory work, or political commitment towards a national strategy is evident in a number of the other target countries.
- Transboundary activity is limited, reflecting in part, critical political problems such as conflict or instability in neighboring countries, as well as practical/resource difficulties.
- Public and stakeholder participation varies significantly. At the national level all countries are committed to achieving international norms on participation and legal rights to representation in decision-making. Whereas, at the local level, participation is significantly improved through the country activity in ICZM projects such as CAMPs (Coastal Area Management Programmes), supported by PAP/RAC.

The actions of this Component of the project will geographically extend to the spatial components of the Source-to-Sea continuum: basins/aquifers, coastal and marine zones. Planning documents, like National ICZM Strategies and ICZM Plans will be developed, using to the maximum possible extent the IMF, in three countries selected through the consultations with beneficiary countries held during the project design phase: Egypt, Lebanon and Morocco. In the remaining six countries of the project, activities supporting ratification and implementation of the ICZM Protocol, including awareness raising and capacity building activities will be implemented.

The Component will support the implementation of comprehensive ICZM approaches, including:

- Preparation, adoption and support to implementation of gender sensitive National ICZM Strategies, or coastal plans, marine spatial plans and plans focused on coastal resilience to Climate Variability and Change adopting the Integrative Methodological Framework (IMF) developed under MedPartnership;
- Translation of intrinsic environmental vulnerabilities (ecosystems, climate, and groundwater) into Coastal Zone Use Capability or suitability maps and related guidance;
- Use of ICZM tools and instruments;
- Capacity building activities for ICZM, MSP and adaptation to climate variability and change (all project countries).

The Component aims at reaching a total of 12,500,000 hectares of coastal landscapes and seascapes under improved management by implementing comprehensive ICZM planning and approaches in four project countries, at reinforcing the capacity of at least 300 country experts and administrators in the implementation of ICZM practices and involving coastal populations in raising awareness activities.

Expected Outcome 1: Coastal zone sustainability in beneficiary countries enhanced through the expanded compliance with the ICZM Protocol and the adoption of national ICZM strategies, coastal plans and instruments, and improved gender equality.

Output 1.1:

Multi-stakeholders' consultations on ICZM Protocol ratification and implementation (Algeria, Egypt, Lebanon, Morocco and Tunisia).

Activities:

1.1.1 Development of the materials for the consultations in support of ICZM Protocol ratification/implementation

Materials for the consultations developed in the previous PAP/RAC projects (including the GEF MedPartnership) will be upgraded and extended. Particular attention will be dedicated to the use of coastal space through the recent work on the land use and land use change analysis. In the framework of the UN Environment/MAP's Ecosystem Approach (EcAp) initiative, an Integrated Monitoring and Assessment Program (IMAP) is under development. In addition to its 23 Common Indicators, there are four Candidate Common Indicators, including one dedicated to land use change. The land use indicator aims to support implementation of the ICZM Protocol, particularly related to the balanced allocation of

uses, preserving open coastal space, securing setback zone, avoiding urban sprawl by limiting linear extension of urban development including transport infrastructure along the coast and securing ecosystem health. These objectives are among the most important ones of the ICZM Protocol. Being a Candidate Common Indicator, the land use indicator is still in a testing phase. The aim of PAP/RAC is to develop this indicator as a Common Indicator and to assist its monitoring at the whole of the Mediterranean coastal zones. Land use, as well as land use change, may also be used as the indicator for coastal artificialization and for coastal resilience. This work may also provide inputs for protection of the coastal aquifers allocated in the coastal zone. Further work on this methodology will be undertaken in the framework of this activity.

Through this work, particular attention will be dedicated to the setback zone, defined by Article 8 of the ICZM Protocol. This article is one of the most important ones since it promotes multiple benefits, including the establishment of the setback zone as a “no-regret” measure for adaptation to climate change, preserving important natural habitats and landscapes, but also providing an important economic resource for the coastal population (PAP/RAC, 2007). In addition, this article may also represent a tool for protection of the coastal aquifers.

1.1.2. Support for the implementation/ratification of the ICZM Protocol

An estimation of the impacts of the ratification/implementation of the ICZM Protocol will be prepared for three countries (Egypt, Lebanon and Morocco), as a support to the Governments for ratification/implementation of the ICZM Protocol. During the project preparation phase, several countries requested support with an analysis of their legal framework compared to the requirements of the ICZM Protocol, and in particular related to water management. In these countries (Algeria and Tunisia), additional analysis of the legal and institutional framework will be implemented. This work will be tailored to the unique context of each country, and will take into account particularly the national legal framework related to environment, water, aquifers, spatial planning and maritime public domain. Particular attention will be dedicated to the legal framework for implementation of the Article 8, the so-called “setback article”.

An analysis of land use and land use change will be carried out in seven countries where this analysis is not already available or foreseen in other ongoing initiatives. In the context of Activity 1.1.2, a detailed analysis of land use and land use change will be implemented, preferably with the support of experts in the countries concerned, in Albania, Algeria, Egypt, Lebanon, Libya, Morocco and Tunisia. In Libya, the MedOpen module on land use change analysis (output 1.4.3) will be used for this purpose.

In Montenegro, a detailed land use analysis has already been prepared in the framework of a completed CAMP project, and in BiH, this analysis is foreseen in an ongoing Coastal Area Management Plan (CAMP) project.

1.1.3 Five national consultations in support of ICZM Protocol ratification

Results of the Activity 1.1.2 will be presented at the five national consultations: in Algeria, Egypt, Lebanon, Morocco and Tunisia. The key coastal stakeholders, including those whose activities impact the coastal zone (its terrestrial and marine areas), will be on board for the national consultations.

1.1.4 Implementing three sub-regional trainings in support of ICZM Protocol implementation

Three sub-regional trainings on legal and technical aspects of the ICZM Protocol will be organized during the project. Trainings will consist of two parts. The first is related to the interpretation of the legal aspects of the ICZM Protocol. The second is more practical in nature, related to land use and land use change analysis with a view to the fulfilment of the Protocol requirements, particularly related to the balanced allocation of uses, preserving open coastal space, securing a setback zone, avoiding urban sprawl by limiting linear extension of urban development including transport infrastructure along the coast and securing ecosystem health.

1.1.5. Development of the conceptual framework for coastal observation.

Article 16 of the Protocol on ICZM to the Barcelona Convention (UNEP/MAP/PAP, 2008) recognizes that monitoring and observation mechanisms and networks are crucial for the preservation of the Mediterranean Sea and Coasts. Activity 1.1.5 will complement the work undertaken by Contracting Parties to implement IMAP at the national level in the framework of the Ecosystem Approach Process in the Mediterranean, by identifying the necessary monitoring parameters to measure the progress towards good environmental status (GES) of the coast. This activity will complement the IMAP indicators with the land part and result in a proposal for a conceptual framework for coastal observation in all Mediterranean countries.

As a first step, a desk study will be conducted to evaluate the state of the art of existing national capacities, gaps in data, knowledge and capacity, as well as the concerns of countries regarding development of a conceptual framework for coastal observation. Next, two workshops will be organized (one in English and one in French) for the relevant stakeholders from the participating countries (those responsible for coastal observation and monitoring) to present the findings of the desk study, including regional trends and potential avenues for future collaborations. The workshops will also provide an opportunity to collect countries' views on how to sustain and further develop this framework, including their technical and financial needs.

The results of the desk study and the needs expressed by countries during the workshops will be consolidated in a report that can be used as a justification for requests from the countries for additional support in this domain, including through resources available for the development of knowledge tools foreseen in the MedProgramme Knowledge Management Strategy (Annex T), executed through Child Project 4.1.

Output 1.2:

Inter-Ministerial Coordination mechanisms for coastal management in place

Activities:

1.2.1 Establishment or enhancement of Inter-Ministerial Coordination (IMC) frameworks

Terms of reference for the establishment or enhancement of Inter-Ministerial Coordination (IMC) frameworks will be developed in four countries (Bosnia and Herzegovina, Egypt[1], Lebanon and Tunisia) and submitted for approval to the responsible national authorities. At least one national meeting will be organized per country to present the proposed terms of reference. The main task for the IMCs will be the ratification of the ICZM Protocol (Bosnia and Herzegovina and Tunisia) or development and adoption of the National ICZM Strategy (Lebanon). For additional information on existing coordination mechanisms, please refer to the sub-heading “Interministerial Coordination Mechanisms in the participating countries” in Section 2B: Baseline Scenario: Project Countries.

1.2.2 Organizing national consultations to launch IMCs

At least three national consultations will be organized with the aim to launch effective Inter-Ministerial Committees (IMC) in relevant countries. Materials prepared under Activity 1.1.2 will be presented to high-level decision makers and appointed members of the IMCs. For at least one IMC meeting, the products of Activity 1.5.1. to raise awareness on the need to build coastal resilience will be used.

Output 1.3:

2 National ICZM Strategies (Egypt and Lebanon)/ 2 ICZM Plans developed and submitted for adoption (Montenegro and Morocco) 1 Integrated Management Plan prepared according to the IMF (Damour, Lebanon)

Activities:

1.3.1 Two national ICZM Strategies developed and submitted for adoption (Egypt and Lebanon)

A National ICZM Strategy, as defined by the ICZM Protocol's Article 18 is to be: *“based on an analysis of the existing situation, and shall set the objectives, determine priorities with an indication of the reasons, identify coastal ecosystems needing management, as well as all relevant actors and processes, enumerate the measures to be taken and their costs as well as the institutional instruments and legal and financial means available, and set an implementation schedule.”*

A successful National ICZM Strategy can only be developed in a close collaboration with the national authorities, supported with the multi-disciplinary team of experts, and by using a wide participatory process from the onset of the strategy drafting. The success of a National Strategy is characterized not only by the quality of the proposed solutions, but also by the degree of its implementation. Although the implementation is fully dependent upon the executive powers within the countries, the prospects for successful implementation can be greatly increased by ensuring a high-quality development process. This entails the engagement of all levels of government involved with the coast. At the same time, the key stakeholders must be on board for preparation of the National ICZM Strategy, including those responsible for management of coastal resources, or those having activities under their jurisdiction that impact the land and/or marine areas of the coastal zone. Implementation of the National ICZM Strategy is a long-term task for many actors of the government; therefore, wide ownership and assertive leadership are crucial for its success. For this reason, although the analytical preparatory work may be led by an international organization, the key leaders from the very beginning of the preparation of the National ICZM Strategy will be the national bodies with the executing powers and with the ambition to lead the Strategy's implementation.

The National ICZM Strategies will be prepared through workshops and consultations organized throughout every stage of the document's development. In order to design the appropriate governance mechanism, particular attention will be dedicated to the legal and institutional frameworks. Constant efforts will be devoted to the identification of potential barriers to the uptake of ICZM instruments, and approaches for the development of the National ICZM Strategies will be adapted accordingly. The development of the Strategies will also involve the Inter-ministerial Committees. This activity will create the enabling environment for governments to carry out planning activities in a more holistic and integrative manner, to consider proactive approaches and to contribute to the sustainable development of their coasts. Capacities of the national and sub-national institutions will be enhanced throughout the process.

Rivers/surface waters transcend and connect the coastal areas with inland areas; many of the root causes of the effects manifested in these waters can be traced to the inland areas. In this regard, the application of the source-to-sea approach and the use of the IMF becomes relevant in the preparation of the ICZM strategy. For example, the application of this approach is impeded by the political realities stemming from the transboundary character of the Nile in the case of Egypt[2]. However, impediments of this type and intensity do not exist in the case of Lebanon and hence the development of the plan will incorporate source-to-sea considerations and realities.

1.3.2 One ICZM Plan developed and submitted for adoption (Morocco)

An ICZM Plan, or Coastal Plan is defined by ICZM Protocol's Article 18 as: *“self-standing or integrated in other plans or programs, specifying the orientations of the national strategy and implementing it at an appropriate territorial level, determining, inter alia and where appropriate, the carrying capacities and conditions for the allocation and use of respective marine and land parts of coastal zone.”* Activity 1.3.2 focuses on the development of the ICZM Plan, and on its submission for adoption. The process of the development of the Plan is presented in Figure 37 below, as it was defined and tested in the MedPartnership project. In the scoping/establishment stage, the key challenges for achieving the vision

of the sustainable future will be articulated, in view of their further study within the analysis stage. Particular attention will be dedicated to surface water and aquifers as key coastal natural resources (in addition the coastal space itself), and to gender roles. Key obstacles for the sustainability of coastal development will be analyzed to reveal their root causes, followed by the definition of solutions for sustainable coastal development and for enhancing the resilience of the coastal zone. Particular attention will be dedicated to the establishment of the governance mechanism as a key prerequisite for the Plan's implementation.

[1] The creation of an IMC mechanism for Egypt will be undertaken in the context of Activity 1.3.1.

[2] The government of Egypt will provide some updated information during the inception phase of the project.



Figure 37 ICZM PROCESS & CLIMAGINE

This activity presents multiple opportunities for synergistic interactions with other Child Projects of the MedProgramme, namely the Special Climate Change Fund project “Enhancing regional climate change adaptation in the Mediterranean Marine and Coastal Areas” (SCCF Project) and Child Project 2.2 “Mediterranean Coastal Zones: Managing the Water-Food-Energy and Ecosystem Nexus”.

In the SCCF Project, a set of recommendations will be prepared to mainstream climate change adaptation strategies in the ICZM Plan in Morocco that is envisaged under Activity 1.3.2 of the Child Project 2.1. The two projects will benefit from having a common set of stakeholders in Morocco for both sets of activities as well as a shared scientific and socioeconomic knowledge base for the design and execution of activities.

At the same time, opportunities for synergies with Child Project 2.2. will be explored regarding the integration of the Water-Food-Energy-Ecosystem (WFEE) nexus approach in the ICZM Plan that will be developed for Activity 1.3.2 of the Child Project 2.1. The level of synergies will be defined by the readiness of the responsible institutions of the WFEE sectors to constructively contribute to the development of the ICZM Plan.

1.3.3 Implementing the participatory methodology Climagine as a support to the development of the National ICZM Strategies and ICZM Plans.

Climagine is a methodology developed under the MedPartnership for systemic and prospective analysis of sustainability taking into account possible future scenarios of vulnerability and adaptation paths in the coastal areas. The methodology is designed to involve all relevant local stakeholders to integrate local knowledge, preferences and solutions in the planning documents, as well as to build stakeholders' ownership of the process. Climagine will be implemented in parallel with Activities 1.3.1, 1.3.2 and 1.3.5 (development of the ICZM Strategies and Plans) through four steps: analyzing the context; identifying sustainability indicators and assessing their values; modelling and exploring indicators and scenarios of future evolutions; and participating in designing solutions and prioritizing actions for reaching sustainable coastal development in the project zone.

1.3.4 One Integrated Management Plan (IMP) to be prepared in collaboration with all partners, according to the IMF methodology (Damour, Lebanon)

As stated in the ICZM Protocol, an ICZM Plan may be self-standing or integrated in other plans. An Integrated Management Plan (IMP) for an area of the Damour region will be prepared according the Integrative Methodological Framework (IMF) and through the collaborative efforts of all partners of the Child Project 2.1. Rather than preparing separate management plans for the coastal zone, surface water, and aquifers, one unique plan will be designed following the “source to sea” approach. In the framework of this activity, land use capability mapping will also be implemented.

The IMP will be prepared for an area encompassing (i) the municipality of Damour, (ii) the Damour River Basin and its adjacent coastal area, and (iii) the Damour Coastal Aquifer. A detailed description of this area is set forth in Annex R[1].

1.3.5 One ICZM Plan developed and submitted for adoption (Kotor Bay, Montenegro)

The development of a local ICZM plan that mainstreams climate change adaptation is identified as one of the priorities in Montenegro’s National ICZM Strategy. Using the same approach described in Activity 1.3.2 (development of an ICZM Plan in Morocco), an ICZM Plan will be developed for one site in Montenegro according the ICZM Protocol Article

18, also in synergy with Activity 2.1 of the SCCF Project. Using the methodology and the process illustrated in Figure 37, an ICZM plan will be prepared for the area of the Boka Kotorska Bay (Kotor Bay) in Montenegro. Activities that involve the development of coastal climate change adaptation strategies will be funded from the SCCF Project, while all other priority coastal issues will be implemented with the resources of Activity 1.3.5 of the Child Project 2.1.

Like the interventions foreseen under Activity 1.3.2, this activity also presents multiple opportunities for synergistic interactions with other Child Projects of the MedProgramme, namely the previously referenced SCCF Project and Child Project 2.2.

In the SCCF Project, a set of recommendations will be prepared to mainstream climate change adaptation strategies in the ICZM Plan in Montenegro that is envisaged under Activity 1.3.5 of the Child Project 2.1. The two projects will benefit from having a common set of stakeholders in Montenegro for both sets of activities as well as a shared scientific and socioeconomic knowledge base for the design and execution of activities.

At the same time, opportunities for synergies with Child Project 2.2. will be explored regarding the integration of the Water-Food-Energy-Ecosystem (WFEE) nexus approach in the ICZM Plan that will be developed for Activity 1.3.5 of the Child Project 2.1. The level of synergies will be defined by the readiness of the responsible institutions of the WFEE sectors to constructively contribute to the development of the ICZM Plan.

Output 1.4:

A series of training events on ICZM, Marine Spatial Planning and CVC adaptation developed and implemented

Activities:

1.4.1 Preparation of training material for the MedOpen online training course

MedOpen is an online training program on coastal management in the Mediterranean, with modules currently available on ICZM and CVC. The program is available in English and in French, and in Basic and Advanced Modules. In the framework of this activity, MedOpen will be expanded to include three additional modules: building coastal resilience; marine spatial planning in the Mediterranean; and land use change analysis for the Mediterranean coastal zones.

The level of information, access and the effort needed to complete the program depend on the type of module. The contents of the Basic Modules are available to all users throughout the year, and provide elementary information on the study topic. The contents of the Advanced Modules are more in-depth and available only to registered participants during sessions organized regularly by PAP/RAC. The Advanced Module requires a higher degree of commitment by trainees: in addition to the lectures and additional reading materials, students participate in a simulation exercise and are required to complete a final essay. If their work is evaluated positively, students are awarded the MedOpen ICZM Advanced Certificate.

1.4.2 Implementing advanced online training courses and training events on a yearly basis

Starting from the second year of the project implementation, an Advanced Module will be implemented for different target groups. The newly developed module on building coastal resilience will be launched in the first half of the second year of the project implementation, while the module on the land use change analysis will be launched by the end of the second year. During the third year of the project implementation, the module on marine spatial planning in the Mediterranean will be implemented. All training opportunities will be

announced through the GEF network and PAP/RAC regular channels. For the Advanced Module, the number of participants will be limited to 25. For each module at least one lecturer will be secured to lead the course and to evaluate students' final essays. Participants from the project countries will be given priority in accessing the Advanced Module.

1.4.3 Face-to-face training to support MedOpen module on land use and land use change analysis

In addition to the on-line format, some trainings will be supported with an on-the-ground final session. This has been demonstrated in the MedOpen 2018 in Algeria and will be replicated in the third year of the project implementation. In collaboration with the national partner, support will be provided to complement the advanced on-line course with the live, face-to-face sessions. This will be organized for the module on the land use and land use change analysis, where the partner would be the organization in charge for future monitoring of this important indicator. Land use change is a Candidate Common Indicator for IMAP, so the GEF MedProgramme Child Project 2.1 is expected to contribute to improving this indicator so that it becomes one of the indicators proposed for regular monitoring. Through MedOpen the materials will be prepared to be used for all those in the national institutions who may be in charge of its monitoring in the future.

- Output 1.5:

Raised awareness on the approaches promoted by the project (with attention to the engagement of private sector).

Since 2007, the Mediterranean Coast Day has been celebrated with an awareness raising campaign culminating in a final event on 25 September of each year. This event honors the beauty of Mediterranean coasts and calls people to become engaged in the management and protection of these areas. The awareness raising campaign for the Mediterranean Coast Day is based on the Mediterranean Awareness Raising Strategy (MARS), and already has an established visual identity, as well as a series of media products that may be reutilized every year. Three central celebrations will be organized in the three project countries (Albania, Algeria and Morocco), while additional activities will be supported in all project countries that express interest in organizing events.

- Activities:

1.5.1 Producing materials for awareness raising campaigns

Activity 1.5.1 will involve the production of new outreach materials tailored to the specific themes of three awareness raising campaigns that will be organized in three countries during the project. Materials to be produced include photographs for exhibitions, press releases, short videos, posters, stickers, brochures, leaflets, etc.

The three themes for the campaigns will be Coastal Resilience, Coastal Aquifers and Women in Coastal Management. The location of the final event for the Coast Day celebrations will be chosen two years before the target year.

1.5.2 Implementing three awareness raising campaigns with the central themes of Coastal Resilience, Coastal Aquifers and Women in Coastal Management

Three campaigns to promote the Coast Day celebrations will be organized during the project life span. Each campaign will highlight a different dimension of coastal zone management. The themes chosen for the three forthcoming campaigns are: Coastal Resilience, Coastal Aquifers and Women in Coastal Management.

The campaign on Coastal Resilience will be implemented during the second year of the project. The activities for this include the organization of a high-quality photo exhibition in a public space, an international conference, as well as a number of promotional activities in city chosen for the final celebration event, such as school contests, a theatrical work, sailing, kayaking or biking expeditions or competitions, local or organic food fairs, etc. For the occasion of the Coast Day, an Ambassador for the Coast will be appointed.

Activities for subsequent awareness raising campaigns will be designed based on the expressed needs of the relevant stakeholders involved in the campaigns and in view of building on effective outreach and communication strategies undertaken for past campaigns.

1.5.3 Participation in dissemination and awareness raising activities at the regional and global levels

The progress and results achieved through Component 1 will be showcased for replication purposes at both the regional and the global levels:

- Regional level: Methodologies for ICZM Strategies and Plans design and implementation, and the examples of Albania, Algeria and Morocco will be disseminated regionally through the activities and knowledge management tools developed under Child Project 4.1.
- Global level: Participation in IW LEARN activities and events, including International Waters Conferences; scientific papers presented and published in major journals /conferences.

Component 2: Management of Coastal Aquifers and Related Ecosystems

Contrary to all other water bodies, aquifers are located in the subsurface and visible only through the eyes of science, that is, hydrogeology. As a consequence, while in all countries of the world groundwater is being used intensively, in many cases this takes place in the absence of a full understanding of the nature and characteristics of the resource, including of its occurrence in defined geological permeable rock formations known as “aquifers”. Moreover, groundwater resource boundaries, or aquifer boundaries, are often very poorly known and so many aquifers remain unknown or only partly recognized as separate, often unconnected, entities.

This is particularly true for coastal aquifers, whose special nature and interlinkages with the marine environment are often not recognized by countries and local administrators. Lack of recognition increases their vulnerability to anthropogenic pressures. Hence, the need to make coastal aquifers “visible” and recognized by the countries where they are located.

Although not as obvious as river discharges, continental groundwater also discharges directly into the ocean wherever a coastal aquifer is connected to the sea. Within the last few decades, recognition has emerged that groundwater discharges into the sea, or Submarine Groundwater Discharges (SGD), may be both volumetrically and chemically important. Hydraulic gradients and transmissivity are the main factors that determine the flux of SGD. Without the benefit of measurements, one may predict that land-derived SGD fluxes would concentrate in areas of high permeability (karst), high relief near the coast; areas without well-developed river systems (some large oceanic islands); and regions with high groundwater recharge rates (e.g. humid tropics).

The flux of terrestrially-driven groundwater through coastal sediments is becoming recognized as an important mechanism for transferring material from the land to the ocean. This process may affect the biogeochemistry of estuaries and the coastal ocean through the addition of metals and carbon, and most of all nutrients which can have significant effects on water quality in estuaries, as they cause eutrophication of near-shore waters. One of the main reasons for this increase in nutrients loads to the sea is the increasing population density and changing agricultural practices in coastal areas. The ecological and economic impacts of eutrophication have been substantial in many coastal regions, and this demands a better understanding of the contribution of groundwater-derived nutrient fluxes.

In addition to SGD, seawater intrusion is the other process of connection between the fresh groundwater and the saline groundwater coming from the sea. Monitoring of the position and understanding the temporal and spatial dynamics of this interface is also a key when dealing with coastal aquifers management. In fact, seawater intrusion is the biggest threat to coastal fresh groundwater resources. Intrusion is triggered by multiple factors, such as sea level rise as a consequence of climate change, or over-exploitation of groundwater

resources due to increasing populations in coastal areas. In any case, the fresh water-salt water interface dynamics reflect the status of coastal fresh groundwater resources, also connected to SGD dynamics.

It is hence evident that to understand coastal dynamics and assess the state of coastal and marine resources and ecosystems, the interactions between coastal aquifers and the marine environment must be taken into full consideration. They should also be reflected in Integrated Coastal Zone Management (ICZM) and marine protection strategies and plans.

The goal of Component 2 is to implement sustainable management policies and practices in the five coastal aquifers considered of priority importance by the countries and in the coastal ecosystems related to them, while conducting sub-regional trainings and national dialogues on conjunctive surface and groundwater management solutions in coastal areas. This Component will support the implementation of actions foreseen in the two Sub-Regional Action Plans developed under the MedPartnership (Adriatic Basin; and South, Central and Levantine Basin) on the sustainable management of coastal aquifers and groundwater-related ecosystems agreed upon by the countries as part of MedPartnership. These actions will be implemented in five priority aquifers identified through the regional consultations conducted during the preparation phase of Child Project 2.1 (Figure 38). These aquifers are:

- Albania and Montenegro – Buna-Bojana transboundary coastal aquifer
- Egypt – North West coastal aquifer
- Lebanon – Damour coastal aquifer
- Morocco – Rhiss-Nekkor coastal aquifer
- Tunisia – Ras Jebel coastal aquifer

[1] Note: the geographic scope of this activity is subject to modification, based on the expressed priorities and needs of the stakeholders in Lebanon.



Figure 38 Location of the five priority aquifers for Component 2 of Child Project 2.1 (UNESCO-IHP 2015)

The actions that the project will implement under Component 2 will include the further improvement of the inventory and characterization of coastal aquifers produced by MedPartnership, through the following activities:

- In-depth systematic aquifer assessments (based on TWAP Level 2[1]), the assessment of seawater intrusion and aquifer salinization, mapping of water and land uses and inventorying wells, estimating abstractions and related energy consumption, and conducting sex-disaggregated data collection and gender analyses, amongst others;
- The identification of major submarine groundwater discharge zones, and assessment of flows and contaminant loads (all project countries);
- Integrated assessment including a systematic mapping of groundwater vulnerability in the coastal zone, using methods accounting for both vertical and horizontal vulnerability, and defining local land uses and human activities compatible with the various classes of vulnerability;
- The assessment and diagnosis of coastal ecosystems related to priority aquifers, and the strengthening of management capacity related to ecosystem services and their evolution trends, and on the strong relationships existing between groundwater flows and surface waters, wetlands services, and human wellbeing;
- Improvement of stakeholder involvement through capacity building and participating workshops and consultations;
- The preparation for adoption of management plans for the five priority coastal aquifers; and
- The design and testing on the ground of modern multi-purpose monitoring networks.

Figure 39 provides a schematic overview of the interactions between the activities of Component 2

[1] The GEF Transboundary Waters Assessment Programme (TWAP) established two levels of indicator-based assessments for transboundary aquifers. Level 1 is a baseline assessment of ten core indicators; Level 2 builds on this baseline with an additional ten indicators.

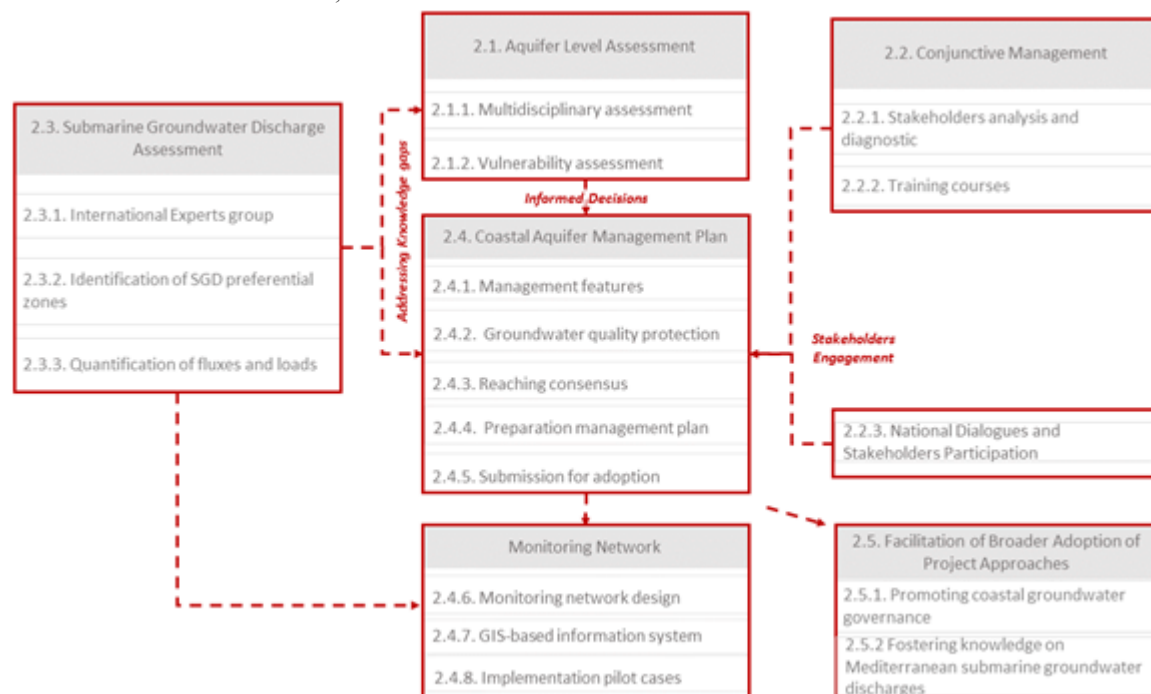


Figure 39 Schematic overview of the interactions between the activities of Component 2

Component 2: Outcomes, outputs and activities

Expected Outcome 2: Increased resilience to climatic variability and change, and enhanced water security of coastal populations through improved sustainability of services provided by coastal aquifers and by groundwater-related coastal ecosystems.

Output 2.1:

Detailed assessments of the current state of priority coastal aquifers and related coastal ecosystems, vulnerability maps and recommendations for land use planning addressing relevant stakeholders, including private sector, national and local water associations and water users.

Priority aquifers are not necessarily the largest aquifers in a country. In selecting the five priority aquifers to be included in this project, countries have adopted prioritization criteria that included socio-economic importance, degree of threat to services or sustainability, and level of socio-political engagement. The characterization and assessment process of the five priority coastal aquifers will include:

- physical delineation of the system: mapping the groundwater flow regime from natural recharge to discharge zones (thus connecting the landscape with the subsurface system), whilst taking account of major perturbations of human origin;
- socio-economic evaluation of the system: evaluating the importance of the system to the economy and to human well-being, and highlighting systems where groundwater plays a critical role in water supply, irrigated agriculture, industrial production or ecosystem sustainability; and
- assessment of pressures on the system: assessing susceptibility and vulnerability to irreversible degradation (through subsidence, salinization and persistent pollution) or tendency to be associated with land water-logging and groundwater flooding, and identifying any opportunity to create new or enhanced underground water reservoirs.

The results of the characterization and assessment activities will be documented in five Coastal Aquifer Assessment Reports, one for each of the priority aquifers.

Activity 2.1.1: Characterization and assessment of priority coastal aquifers and related ecosystems through the application of a multi-disciplinary indicator-based methodology

This activity aims to provide a comprehensive evaluation of the present status of each of the five priority coastal aquifers and of their interactions with dependent ecosystems. The assessment will consider their multiple dimensions:

- Hydrogeological aspects;
- Environmental aspects;
- Climatic aspects;
- Socio-economic aspects, including gender;
- Legal aspects; and
- Institutional aspects.

This work will build on the multi-disciplinary indicator-based methodology developed by the GEF Transboundary Waters Assessment Programme (TWAP), considering compiled data from (i) existing monitoring networks; (ii) abstraction wells; (iii) physical and chemical surveys; (iv) land use maps; (v) gender surveys (when applicable); and (vi) existing legal and institutional frameworks. The basic methodology will be expanded and adapted to the coastal system specificities and will integrate recommendations and elements from the EU-WFD, the ICZM Protocol, and the Integrative Methodological Framework (IMF) developed under the MedPartnership. The activity will develop indicators adapted to the specific conditions of each priority coastal aquifer, such as seawater intrusion, submarine groundwater discharges and the interaction with coastal water-dependent ecosystems. Indicators and indexes^[1] will provide condensed information at aquifer and related ecosystem level, acting as an important communication tool for policy and decision makers, planners and the general public. Numerical modelling will be applied whenever possible to help validate conceptual models, to allow aquifer managers to test interventions before applying them and to evaluate future scenarios.

Activity 2.1.2: Comprehensive vulnerability assessment and associated management recommendations

In coastal aquifers, an assessment of intrinsic vulnerability to contamination must consider not only pollutants that can enter the system infiltrating vertically from the land surface, but also seawater intrusion that can penetrate horizontally through the aquifer. To respond to the need for a tool to account for both potential sources of contamination, a new approach

considering vertical and horizontal vulnerability – the Aquifer Comprehensive Vulnerability Mapping (ACVM) method - was developed under the MedPartnership. It features new methodologies for:

1. Merging vertical and horizontal vulnerability in coastal areas;
2. Mapping horizontal vulnerability associated with seawater intrusion; and
3. Evaluating the potential impact of sea level variations.

For the evaluation of vertical intrinsic vulnerability (traditionally associated with pollution infiltration from the surface), there are two approaches: the homogeneous area zoning approach (also known as hydrogeological complex and setting assessment); and the parametric systems approach. The choice of the most appropriate method for evaluating vulnerability is strictly linked to the amount of available data and to their quality and distribution.

In Activity 2.1.2, the ACVM method will be used to evaluate and map the comprehensive vulnerability of the five priority aquifers, taking into account horizontal and vertical vulnerability. For each aquifer, a map will be produced that indicates the vulnerability class (index) of the different portions of the aquifer, thereby delineating areas with higher or lower vulnerability. Additionally, a set of groundwater management recommendations will be established to translate the findings of the vulnerability assessment into practical guidelines. The vulnerability assessments, maps and management recommendations will serve as tools to facilitate decision making by managers of groundwater resources.

Output 2.2:

National Dialogues identifying potential conjunctive management solutions, including stakeholders' training modules designed and implemented.

A key element in groundwater governance is the systematic involvement of stakeholders. This is particularly true in coastal areas, where many human activities interfere with natural active processes at the land-sea interface, and where surface and groundwater resources tend to lose their distinctive characters in the transition to the marine environment, hence requiring conjunctive management approaches. The findings of the Groundwater Governance GEF/FAO/UNESCO/World Bank project recently concluded (2016), have however demonstrated that the role of stakeholders has generally been limited and remarkably passive, due in part to lack of awareness or knowledge in addition to the lack of institutionalized structures for participation.

The activities under this output will attempt to address and overcome barriers preventing the effective engagement of stakeholders, and they revolve around the following elements: (i) information sharing and dissemination; (ii) capacity building and awareness raising; and (iii) testing mechanisms to facilitate stakeholders' active participation in designing and implementing groundwater management plans.

Stakeholder engagement will be reinforced, along with technical and institutional capacities, through the design and implementation of three training modules on the conjunctive management of surface and groundwater, one module for each of the three sub-regions (Adriatic, Southern and Eastern Mediterranean). The face-to-face training modules will be tailored to the specific needs of national authorities and other multi-sectoral stakeholders who will play a predominant role in the implementation of conjunctive management solutions.

Activity 2.2.1: Stakeholder analysis carried at national level

For this activity, a stakeholder analysis will be undertaken at the national level for each of the five priority aquifers. This is required to identify key actors, assess knowledge gaps, and unravel gender roles and inequalities, and as a basis for the preparation of awareness campaigns, participation mechanisms and events adapted to the socio-economic and cultural context of the areas in question.

As a first step, the stakeholder groups that will be targeted by this activity will be identified. This process will be guided by the Global Diagnostic on Groundwater Governance, carried out as part of the Groundwater Governance project, which identified the following actors as relevant stakeholders in water governance:

- Government organizations responsible for (ground)water management, environmental management or related tasks;
- Public or private water utilities (water supply and sewerage agencies or companies);
- Groundwater users in the domestic, agricultural or industrial sector;
- Government representatives of the different water use sectors;
- Water user associations;
- NGOs;
- Industry, the mining, construction and any other private sectors with a stake in the subsurface or influencing subsurface conditions;
- Academic institutions, research and development organizations, consultants and other representatives of science and technology; and
- Schools.

In the case of coastal aquifers, several additional groups of stakeholders need to be considered, among them fisherfolk, the tourism industry, women's associations, and marine and coastal nature conservation entities.

Once the relevant stakeholder groups have been identified, an analysis will be undertaken to determine, amongst other aspects: their roles in coastal and water resources management activities and associated impacts on these resources; their level of knowledge about sustainable approaches to water resources management; technical, financial and institutional capacities to implement actions in support of coastal aquifer management plans; potential entry points for changing behaviors that could lead to wiser use of water resources; barriers to the improvement of environmental management practices affecting coastal water resources; preferred modes of communication with respect to interactions with governments and other stakeholders; and an indication of their willingness to take part in dialogues on the elaboration of aquifer management plans or the preparation of recommendations on conjunctive management. Throughout the analysis, attention will be given to gathering information about the implications of gender in the stakeholder groups and their activities pertaining to water resources management.

Finally, and in accordance with the relevant guidance from the IMF (MedPartnership 2015), a communication strategy will be developed to define how to engage with and disseminate information to the different stakeholder groups. The communication strategy will also consider how to reach the broader public, in order to raise awareness on key messages regarding sustainable management of groundwater resources, and to disseminate relevant assessment results and progress on the development of coastal aquifer management plans.

Activity 2.2.2: Training modules design and implementation

Based on the outcomes of the stakeholder analysis, a capacity building strategy will be designed. The capacity building strategy will be oriented to key stakeholders whose predominant role in the management of groundwater resources could be an obstacle or an asset for the management plan design and implementation. The capacity building strategy will focus on closing knowledge gaps within the community of stakeholders, and on fostering the empowerment of women and gender equality in water stewardship and management.

Next, face-to-face training activities and modules will be designed to focus on aspects relevant for conjunctive surface and groundwater management and enhance a common understanding on key elements such as (i) Basic Groundwater Governance Principles and management tools; (ii) Hydrogeological and socio-economic implications of surface water and groundwater interactions; (iii) Available tools for the conjunctive management of groundwater and surface water; and (iv) Innovative tools (e.g. numerical modelling, isotope techniques) for improving groundwater management.

One training module will be designed and implemented for each of the three sub-regions (Adriatic, Southern and Eastern Mediterranean).

Activity 2.2.3 National Dialogues identifying potential conjunctive management solutions.

Previously identified and trained stakeholders are expected to participate in structured dialogues aimed at identifying conjunctive management recommendations to be included in the priority aquifer management plans. The main objectives of activities under this output will be to create communication and participation mechanisms, to facilitate cooperation with stakeholders and relevant authorities, and to identify a common vision towards the plan. The dialogues will aim at (i) the promotion of conjunctive use of groundwater and surface water, (ii) promoting compliance with basic groundwater governance guiding principles and (iii) the prioritization of climate change adaption strategies. Special attention should be given to the adoption of groundwater – surface water conjunctive management approaches, to solve complex problems like over-allocation, over-exploitation, and groundwater salinization. Sustainability of groundwater-dependent ecosystem should be given due recognition when discussing water allocation and usage prioritization.

Five National Dialogues will be organized to identify potential conjunctive management solutions, one for each of the five priority aquifers.

The National Dialogues are designed to provide a means for a broad range of stakeholders within a country to come together and learn, discuss and agree (or take steps toward agreement), on environmental and sustainability issues across the board, in view of mainstreaming environment values and compliance with Multilateral Environmental Agreements (MEAs) in national decision making.

The participants in the National Dialogues will include government ministries and agencies, non-governmental/civil society organizations, communities, academic and research institutions and the private sector, as well as partners and donors.

In this activity, participants will first be informed about the main findings of the aquifer assessment (Output 2.1) and will then be guided through a facilitated dialogue aimed at identifying and agreeing upon solutions to enhance the aquifer's sustainability and its resilience to climate change and variability. These may include policy, legal and institutional reforms, adoption of new practices such as water reuse and managed aquifer recharge, new land use planning instruments accounting for aquifer vulnerability, etc.

Output 2.3:

National Assessments of Submarine Groundwater Discharges and of Marine-Freshwater Interactions.

The concept of Integrated Coastal Zone Management (ICZM) implies the management of all water bodies in coastal areas as a unique interconnected system. Therefore, when addressing coastal aquifers management, it is necessary to consider their connection to coastal marine ecosystems through submarine groundwater discharge (SGD).

Global statistical estimates indicate that SGDs are on average 0.5% of river flow; however, contaminant loads of SGD can be locally important. While inputs from major rivers are gauged and well analyzed (thus allowing relatively precise estimates of freshwater and contaminant inputs to the ocean), assessing groundwater fluxes and their impacts on the near-

shore marine environment is much more difficult, as there is no simple means to gauge these fluxes to the sea. Despite their unquestionable contribution to coastal livelihoods and economy, shallow marine coastal environments are nevertheless subjected to all types of environmental pressures. These include pressures related to the presence of large urban populations and intense agricultural activities involved fertilizer use and/or livestock rearing that can put these coastal environments at high risk for coastal eutrophication, leading to high-biomass algal blooms, depletion of oxygen, increased turbidity and changes in community composition.

Because of its environmental and economic implications, understanding of the volume and composition of the SGD is a topic of growing interest, addressed in this project through a comprehensive regional assessment. The activities under this output aim to create a baseline assessment of submarine groundwater discharge at the sub-regional level in the South and Eastern Coasts of the Mediterranean. The results should allow identification of discharge zones along the national coasts and quantify fluxes at selected locations. The qualitative and quantitative information gathered will be used to assess groundwater dependency of coastal ecosystems and will facilitate design of ICZM plans. The assessment will contribute to global research on submarine groundwater discharge occurrence and hence global water balance observation.

An Assessment on SGD and Marine-Freshwater Interactions will be conducted for each of the countries participating in Child Project 2.1.

Activity 2.3.1: Creation of an SGD international expert advisory group

Methods for SGD detection and quantification are constantly evolving. The detection and quantification of SGD at a large scale is a novel task that will be undertaken in this project, and will benefit from the involvement of international experts with specialized experience in this domain. In fact, this project could serve as a reference in the field of SGD research, given the scale and actors involved.

In this activity, UNESCO-IHP will create, lead and administer an SGD international expert advisory group focused on the Mediterranean, for the duration of Child Project 2.1. The approach will be inclusive, with **participation from the civil society (local groundwater associations and coastal resources users)**. **As such, citizen-science will be considered with the aim of empowering local community.** Overall, the creation of an advisory group of experts will boost local capacities and knowledge transfer among scientists, society and administrations. Creation of an advisory group of experts will boost local capacities and knowledge transfer among scientists, society and administrations.

The advisory group will involve, amongst others, international organizations and research groups with experience in the field of SGD, such as:

- Intergovernmental Oceanographic Commission (UNESCO IOC)
- Scientific Committee on Oceanic Research (SCOR)
- The European Space Agency (ESA)

The advisory group will be responsible for organizing national workshops promoting knowledge transfer and capacity building on SGD assessment; reviewing and recommending state of the art techniques for the identification of submarine groundwater discharge zones and their quantification, considered most adequate for the scale and purpose of the project; and organizing a Mediterranean Regional Conference on SGD. **Selected local stakeholders from the pilot aquifers will also be invited to participate in the Mediterranean Regional Conference on SGD.**

Activity 2.3.2: Identification of SGD preferential zones at national level

Submarine groundwater discharges do not occur homogeneously along the coast. Depending on the coast morphology and lithology, SGD can occur close to the coast or far away, in localized sources or along wide areas of the seafloor. Thus, the first step towards a SGD assessment is to detect where this phenomenon is occurring.

There are few reviews or inventories of groundwater discharge to the sea at the global scale. Existing reviews concentrate on the analysis of scarce direct measurements, done with different techniques, and difficult to extrapolate to a wider scale. At the regional scale, Rodellas et al. (2015) provided an overview of SGD contribution to the Mediterranean Sea employing radium (Ra) and radon (Rn) isotopes. Recently, Sawyer, David, and Famiglietti (2016) presented a continental estimate using continental scale hydrography data and climate data sets to derive the submarine groundwater discharge component.

Temperature has also emerged as a proxy for submarine groundwater discharge detection at large scales by means of satellite imagery or thermal infrared images. The project will most likely adopt this method since this kind of imagery is readily available for the coastal areas of Southern and Eastern Mediterranean. Special attention will be paid to the five priority aquifers areas.

Activity 2.3.3: Quantification of fluxes and contaminant loads at selected areas (Priority aquifers)

SGD quantification is most often derived indirectly from water balances and flow rates calculated from regional groundwater level gradients. Indirect measurement techniques include natural tracers, like radium (Ra), radon (Rn), salinity, silica or methane; and groundwater temperature, which can be used as a geophysical tracer to estimate groundwater discharge. Direct methods for quantifying SGD include seepage meters and multilevel piezometers, which can be installed to monitor groundwater potential at different depths.

The first step of Activity 2.4.3 will be to identify the most suitable quantification methods and locations to produce estimates of SGD fluxes and contaminant loads. In principle, Ra and Rn isotopes could be used to estimate SGD fluxes whether or not the SGD zones are accessible. Ra and Rn sampling campaigns inland and off-shore should be complemented with major ions in order to draw information on loads from groundwater to the sea. Whatever technique is used to measure SGD, it will be complemented with hydrogeological models, which will help to up-scale measurements, and validate conceptual models. This task is especially important when discussing nutrients loads, since nutrients are extremely reactive to changes in lithology or salinity.

Activity 2.3.4 Sensitization of coastal communities and stakeholders

In coordination with IW:LEARN activities and in parallel with the appraisal of SGDs, dissemination campaigns on the nature and existence of SGDs will be delivered in all project countries.

• ●Output 2.4:

Priority aquifers coastal management plans produced including design and field testing monitoring multi-purpose networks and protocols.

Any plan to manage groundwater must address aquifer systems as whole. For this, management approaches must address both the aquifer and the groundwater resources present within. In other words, both the container (the aquifer and its connected landscape) and its content (the availability, quality and use of groundwater). It is important that aquifer systems are preserved in good condition, so that recharge is optimized, storage is maximized and quality is not jeopardized. At the same time, groundwater resources should be managed to avoid serious long-term depletion and to minimize the risk of serious pollution. Priority aquifers systems, which are treated as groundwater management units, should generally be defined at the lowest meaningful spatial scale, in other words closest to actual groundwater abstractors and potential polluters. An exception to this preference for local management is where an aquifer system extends across international frontiers, as is the case of the Buna-Bojana Aquifer shared by Albania and Montenegro. Here, transboundary cooperation will be required at the system scale, even if many aspects of routine management could be handled at a local level in groundwater sub-catchments[2].

Five Coastal Aquifer Management Plans will be established, one for each of the priority aquifers.

Activity 2.4.1: Identify the characteristics of the system which will determine how it can best be managed.

Based on the results of Outputs 2.1 – 2.3, the overall state of groundwater development and the hydrogeological characteristics of the aquifer system will need to be taken into account in developing groundwater management plans. Of highest importance are:

- the geographical scale of the aquifer system and size of its storage reserve, which will determine how identifiable it will be for local stakeholders and how amenable it will be to self-regulation;
- the degree of connectivity with surface water, which will indicate whether conjunctive management of surface and groundwater is essential to achieve the efficient use and improved conservation of both resources;
- the level of contemporary recharge, since - if the use of non-renewable groundwater resources is likely to be involved - it should be subject to rigorous control given the strategic implications for intergenerational equity; and
- aquifer susceptibility to irreversible degradation and groundwater vulnerability to pollution, which together will determine the urgency for action and the degree and nature of regeneration that will be needed.

This synthesis work will be done and owned by the responsible local agencies and stakeholders under the guidance and with the facilitation of the project expert staff and following the protocols provided by national responsible entities and in conformity with the recommendations emerging from the Groundwater Governance GEF project.

Activity 2.4.2: Protecting groundwater quality

Protecting groundwater quality is one of the ultimate goals of a management plan. The previously described activity should identify key features in the aquifer system to be taken into account when preparing the management plan. This activity will go a step further, integrating the assessment results with existing land use maps and the distribution of economic activities throughout the aquifer area. This multi-dimensional analysis should result in a set of recommendations towards informed management of groundwater resources. The recommendations will be represented in a land use capability map or matrix in relation to groundwater pollution vulnerability to the existing and planned land uses. An example of this is the pilot demonstration in the Ghar El Melh lagoon (Tunisia) (MedPartnership, 2015).

Activity 2.4.3: Reaching consensus on aquifer services

A consultative, participatory process is required to reach consensus on which aquifer services should be prioritized. The priority services could include:

- water supply security for urban, agricultural or other purposes
- guaranteed access for small private users
- sustaining dependent ecosystems and dry weather river flows

A consultative participatory process will be employed to facilitate dialogues, but in the end a decision will have to be taken by the public agency mandated to manage groundwater. During the consultations, particular attention will be devoted to informing stakeholders about the (i) current state of the groundwater resources including quality concerns and any related trends; (ii) the potential consequences and costs of ‘no management action’; and (iii) the options regarding management measures.

Activity 2.4.4: Preparation of the Coastal Aquifer Management Plans

The following steps will be to elaborate the Coastal Aquifer Management Plans. Plans will be specific to each priority aquifer system identified, and will incorporate the elements of institutional soundness, incentives and investment. The Plans will be designed in collaboration with all stakeholders and will place the emphasis on adopting an inclusive approach including industrial and agricultural actors.

The following are typical elements of groundwater management plans:

- a technically and economically sound array of demand-side and supply-side management measures to achieve re-balancing of groundwater withdrawals with average recharge, such that the risk of irreversible damage to aquifers – such as seawater intrusion - and ecosystems is avoided
- prioritization of water uses on the basis of social and economic priorities
- definition of stakeholder roles and institutions and specification of how those roles will be factored in to planning and management, and how stakeholder institutions will be supported
- planning for conjunctive management measures resulting from Output 2.2
- pollution abatement or control measures in the aquifer recharge zone such that the risk of groundwater quality deterioration is managed
- regulatory measures, economic incentives and policy changes to address groundwater management needs within the given legal and institutional framework – here the priority will be to achieve a practical balance between top-down administration and bottom-up stakeholder engagement participation, including that of industrial/agricultural and other relevant stakeholders;
- working on the essential linkages to other sectors, be they land use planning, energy provision, trade or other policies.

The Plans will include an operational time-frame and management monitoring framework endorsed by the responsible national/local groundwater agencies and all relevant stakeholders.

The Plans must be dynamic in nature, providing capacity for adaptation to changes in groundwater knowledge and in external drivers (such as climate and land use). The indicators of groundwater status defined as part of Output 2.1 will act as barometers of aquifer condition and facilitate an adaptive management approach, taking into account the appropriate response timeframe for the aquifer. For some types of aquifer systems, the response to external pressures is relatively rapid and can be expected to be manifest in a relatively short period (five years, for example), whereas thick aquifers are slower to show signs of improvement, especially when quality is the issue.

Activity 2.4.5: Coastal Aquifer Management Plan submission for approval and adoption by relevant national authorities

Mobilizing high-level political support is imperative for improving groundwater governance. During the preparation of the Coastal Aquifer Management Plan and the Coastal Aquifer Assessment, relevant regional and national authorities and responsible bodies will be fully involved. Such involvement should facilitate adoption of the Plan by the corresponding authority. The commitment of the responsible authorities and key stakeholders to be involved throughout the process will be documented in a “Foundation Statement” issued at the inception of the planning process.

Once the Plan is completed and reviewed by all involved parties, it will be submitted for formal adoption by relevant authorities[3].

Activity 2.4.6: Aquifer monitoring multi-purpose networks and protocols designed and field tested, and responsible personnel trained, in the five priority aquifers.

Successful management needs to be based on sufficient and reliable data regarding the state of the aquifer and its groundwater resources, and its evolution in time. Monitoring programs aim to provide the information required to facilitate informed decisions. The Groundwater Governance Project (GEF FAO 2016) identified the need for data acquisition,

information and knowledge generation and information sharing, as one of the basic for governance at global scale. The MedPartnership has evidenced the excessively scarce information regarding coastal aquifers and the almost total lack of dedicated monitoring networks and data. Under this Output, the project intends to address this critical situation that may jeopardize this key freshwater resource, by filling this gap for the five priority coastal aquifers indicated by the countries, and thus set examples and standards for replication across the region.

The design of the monitoring networks and related protocols will be undertaken by national appointed institutions and actors with the guidance and support of the project experts. In order to ensure long-term sustainability of the monitoring program and network, the monitoring program design and implementation will follow, whenever possible, the principle of public consultation and stakeholder engagement.

A groundwater monitoring program is the combination of monitoring stations, monitoring devices, technical expertise, protocols, data management, visualization tools, stakeholders, ruling bodies and action mechanisms, which allow relevant groundwater data to be collected, stored, interpreted and integrated into useful information for groundwater managers to take informed decisions within the context of the Coastal Aquifer Management Plan. All the elements should be designed in such a way to ensure the long-term sustainability of the monitoring program and its response to the evolving necessities of the Coastal Aquifer Management Plan.

The purposes of each of the five monitoring networks – in line with the EU WFD - will be to provide information on:

- Overall groundwater trends (quality and quantity) in response to climatic fluctuations and water extractions;
- Parts of aquifers subject to over-exploitation;
- Water quality conditions and trends;
- Health of water-dependent ecosystems and humid areas;
- Groundwater-related hazards: pollution, salinization, lowering of the water table; and
- Interactions with surface waters and with the sea.

Each network will consist of two sub-networks:

- The “background sub-network”, devoted to the long-term monitoring of selected wells that will provide data from parts of the aquifers with no (or minimal) anthropogenic effects. These are from areas that have been minimally affected by human activities and are expected to remain so.
- The “vulnerable areas sub-network”, monitoring more densely populated areas that will provide data on aquifers and groundwater dependent ecosystems that have documented, or are suspected of having, anthropogenic effects. The aquifers may have experienced substantial recharge-altering land use changes; or be known to have degraded water quality or declining water levels.

The designed monitoring network will include the revamping of selected existing stations, if any, and the installation of new automatic data collection and transmission systems at key points in the permanent network.

Activity 2.4.7: GIS-Based Information Management System

An Information Management System (IMS) is a tool to facilitate storage, organization and retrieval of information. It will be one of the key aquifer management tools. This harmonized database will enable appointed experts to collect, store and share data and information in a consistent way, following monitoring protocols developed in conjunction with national institutions.

The IMS will consolidate all aquifer information. This not only includes data coming from field monitoring activities (e.g. field monitoring stations, sampling campaigns), but also all the results from the assessment activities (e.g. vulnerability maps, geological maps) and additional data coming from other databases that will be useful for monitoring of groundwater status (e.g. meteorological data, socio-economic data). The IMS will then not only be useful to store information and make it available, but it will also allow for quality controls and to easily update existing information. The IMS will be composed by two main elements: the database that should store and organize different types of data, and the GIS viewer that will facilitate access and sharing of the information.

Automatic monitoring of groundwater levels, temperature, electric conductivity, will provide a real-time source of information if autonomous telematics stations are used. All these data will feed automatically in a database, used as a repository from which other applications will draw information. The combination of this automatically updated database and a GIS-based platform is an essential tool that will allow real-time decision making. Both should allow management bodies and expert groups to have access to real-time information, query data in time and space, and visualize information in table and map views.

Finally, courses should be designed to train local experts on the use of the system, how to maintain it and expand it, ensuring local ownership and long-term sustainability of the IMS beyond the project duration.

For this activity, the following tasks will be undertaken:

- Preparation of information sharing protocols (Harmonization between aquifers, agreement on information dissemination);
- Definition of data formats and harmonized nomenclature between countries;
- Construction of Online GIS-based IMS; and
- Preparation and delivery of training on database management and GIS techniques.

Activity 2.4.8: Implementation Pilot Tests

The monitoring network will be tested in all the five priority aquifers. This will imply: (i) the acquisition and setting up of a limited number of pilot monitoring stations and the execution of sampling campaigns (if necessary); (ii) the processing of the raw data; and (iii) their inclusion in the IMS data base and visualization through the GIS-based online system. Additionally, connection of the IMS with any complementary database that offers information useful for the evaluation of management actions. Furthermore, data will be analyzed through the set of agreed indicators. Finally, a report of the pilot performance of the monitoring program design will be delivered.

The pilot testing of the monitoring program will involve capacity building of assigned local experts of stakeholders involved in the monitoring. This will include, between others, training into monitoring techniques, data processing and assimilation, interpretation and reporting.

For this activity, the following tasks will be undertaken:

1. Purchase material;
2. Preparation and delivery of training on monitoring technology, protocols, maintenance, sampling protocols and reporting;
3. Awareness raising, stakeholder's involvement and public participation programs and events; and

4. Monitoring test period and performance reporting.

Output 2.5

Facilitation of broader adoption of approaches promoted by the project with attention on long term sustainability and engagement of private sector, national and local water associations and water users.

The major effort of the Component 2 is concentrated in two primary areas: coastal groundwater governance, with the preparation for adoption of Management Plans for five Priority Coastal Aquifers, and the inventory of Submarine Groundwater Discharges (SGD) region-wide. Activities under this output will strive to raise national, regional and global awareness and broadly disseminate the knowledge, expertise and tools gained through the Component's actions, and to promote their replication.

Activity 2.5.1: Promoting coastal groundwater governance

The Management Plans for the five priority coastal aquifers will apply the principles, methodologies and criteria developed under the Groundwater Governance GEF/FAO project. These Management Plans will build on a foundation of knowledge of the scientific and socio-economic characteristics of each priority aquifer obtained through an indicators-based assessment of the aquifers and of their areas of influence, including dependent ecosystems, executed following the methodology developed by the GEF/UN Environment TWAP project. This is a major undertaking never attempted before. The broad dissemination of the results achieved and of the methodologies and criteria utilized will be critical to facilitate the broader adoption, in all the Mediterranean littoral countries and beyond, of the sound coastal aquifer management frameworks indispensable to preserve these precious freshwater resources for future generations.

The dissemination activities will be developed for audiences at three levels:

1. National level: Publication in the national languages of the main documents produced (Management Plan, Aquifer Assessment and others); organization of dissemination events involving stakeholders and the national scientific community;
2. Regional level: Proactive participation to the activities and stocktaking events organized in the framework of the CP 4.1, dealing with knowledge management across all MedProgramme child projects; and
3. Global level: Participation in IW LEARN activities and events, including International Waters Conferences; scientific papers presented and published in major journals /conferences.

Activity 2.5.2: Fostering knowledge on Mediterranean submarine groundwater discharges.

When addressing coastal aquifers management, it is necessary to consider their connection to coastal marine ecosystems through submarine groundwater discharges (SGD). Little is known about them in the region and worldwide, but scientific interest on this so far neglected element of the "source to sea" environmental continuum is growing, also in view of its implications in terms of pollution loads discharged to the sea, of marine ecosystems integrity, and even as additional freshwater resources. This Component of Child Project 2.1 will,

for the first time as part of a Large Marine Ecosystem protection initiative, attempt an inventory of SGD's in all project countries applying modern technologies to locate them and assess their flows and possible pollution loads. The results obtained will be made available to all, in the region and beyond, through the organization of a Mediterranean Conference on SGD's, under the sponsorship of IW:LEARN.

Summary of activities for Components 1 and 2 in each participating country

Each of the participating countries of Child Project 2.1 will benefit from a blend of regional and/or national activities foreseen under Components 1 and 2 of the project. The following pages in Box 2 provide a summary of the activities foreseen in each of the nine participating countries.

- [1] Indexes: combinations of indicators designed specifically for each case to address complex problems, such as for example assessing resilience to climate change impacts.
- [2] Transboundary cooperation between Albania and Montenegro on water resources management is already foreseen in the implementation of [the Integrated Resources Management Plan for the Buna-Bojana area](#), developed under the MedPartnership. The Coastal Aquifer Management Plan for the Buna-Bojana coastal aquifer to be developed under Output 2.5 of Child Project 2.1 will be prepared in line with this wider management plan.
- [3] Following adoption, the Coastal Aquifer Management Plan may be integrated (as appropriate) in existing natural resources management plans, for example in the case of the Buna-Bojana Coastal Aquifer, which is within the scope of the Integrated Resources Management Plan for the Buna-Bojana Area.

Box 2: MedProgramme Child Project 2.1: Synopsis of Activities in Project Countries
Albania

National activities		
Coastal Zone Management	·	National assessment to support implementation of the ICZM Protocol
	·	Coast Day central celebration dedicated to coastal aquifers
Management of Coastal Aquifers and Related Ecosystems	·	Preparation of the Priority Actions Plan for the Buna-Bojana Transboundary Coastal Aquifer
	·	National Assessment of Submarine Groundwater Discharges
Regional activities		

Coastal Zone Management	<ul style="list-style-type: none"> · Participation in the sub-regional training in support of ICZM Protocol implementation · Identification of gaps regarding coastal observation, to feed into a regional conceptual framework for coastal observation to monitor progress towards achievement of good environmental status of the coast · Access to and support for the MedOpen online training modules on ICZM, adaptation to climate change, building coastal resilience, marine spatial planning, and land use change analysis · Participation in annual Coast Day events
Management of Coastal Aquifers and Related Ecosystems	<ul style="list-style-type: none"> · Joint regional training modules on conjunctive surface and groundwater management
Program-wide communication and knowledge management	<ul style="list-style-type: none"> · Sharing of best practices as contribution to MedProgramme-wide Knowledge Management Strategy · Contribution of data and active use of the MedProgramme Knowledge Management Platform · Participation in IW:LEARN events

Algeria

National activities	
Coastal Zone Management	<ul style="list-style-type: none"> · National assessment to support ratification of the ICZM Protocol · Stakeholder consultation to support ratification of the ICZM Protocol · Coast Day central celebration
Management of Coastal Aquifers and Related Ecosystems	<ul style="list-style-type: none"> · National Assessment of Submarine Groundwater Discharges
Regional activities	
Coastal Zone Management	<ul style="list-style-type: none"> · Participation in the sub-regional training in support of ICZM Protocol implementation · Identification of gaps regarding coastal observation, to feed into a regional conceptual framework for coastal observation to monitor progress towards achievement of good environmental status of the coast · Access to and support for the MedOpen online training modules on ICZM, adaptation to climate change, building coastal resilience, marine spatial planning, and land use change analysis · Participation in annual Coast Day events
Management of Coastal Aquifers and Related Ecosystems	<ul style="list-style-type: none"> · Joint regional training modules on conjunctive surface and groundwater management

Program-wide communication and knowledge management	<ul style="list-style-type: none">· Sharing of best practices as contribution to MedProgramme-wide Knowledge Management Strategy· Contribution of data and active use of the MedProgramme Knowledge Management Platform· Participation in IW:LEARN events
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Bosnia and Herzegovina

National activities		
Coastal Zone Management	·	National consultation to support the launch of an Inter-Ministerial Committee
Management of Coastal Aquifers and Related Ecosystems	·	National Assessment of Submarine Groundwater Discharges
Regional activities		
Coastal Zone Management	·	<ul style="list-style-type: none"> Participation in the sub-regional training in support of ICZM Protocol implementation Identification of gaps regarding coastal observation, to feed into a regional conceptual framework for coastal observation to monitor progress towards achievement of good environmental status of the coast Access to and support for the MedOpen online training modules on ICZM, adaptation to climate change, building coastal resilience, marine spatial planning, and land use change analysis Participation in annual Coast Day events
Management of Coastal Aquifers and Related Ecosystems	·	Joint regional training modules on conjunctive surface and groundwater management
Program-wide communication and knowledge management	·	<ul style="list-style-type: none"> Sharing of best practices as contribution to MedProgramme-wide Knowledge Management Strategy Contribution of data and active use of the MedProgramme Knowledge Management Platform Participation in IW:LEARN events

Egypt

National activities		
Coastal Zone Management	·	<ul style="list-style-type: none"> Preparation of Egypt's National ICZM Strategy, applying the Climagine participatory approach National assessment to support ratification of the ICZM Protocol Stakeholder consultation to support ratification of the ICZM Protocol
Management of Coastal Aquifers and Related Ecosystems	·	<ul style="list-style-type: none"> Preparation of the Management Plan for the North West Coast Aquifer National Assessment of Submarine Groundwater Discharges
Regional activities		

Coastal Zone Management	<ul style="list-style-type: none"> · Participation in the sub-regional training in support of ICZM Protocol implementation · Identification of gaps regarding coastal observation, to feed into a regional conceptual framework for coastal observation to monitor progress towards achievement of good environmental status of the coast · Access to and support for the MedOpen online training modules on ICZM, adaptation to climate change, building coastal resilience, marine spatial planning, and land use change analysis · Participation in annual Coast Day events
Management of Coastal Aquifers and Related Ecosystems	<ul style="list-style-type: none"> · Joint regional training modules on conjunctive surface and groundwater management
Program-wide communication and knowledge management	<ul style="list-style-type: none"> · Sharing of best practices as contribution to MedProgramme-wide Knowledge Management Strategy · Contribution of data and active use of the MedProgramme Knowledge Management Platform · Participation in IW:LEARN events

Lebanon

National activities		
Coastal Zone Management	<ul style="list-style-type: none"> · Preparation of Lebanon's National ICZM Strategy, applying the Climagine participatory approach · Preparation of the Integrated Management Plan for the Damour Region, applying the Integrative Methodological Framework developed under the MedPartnership, and the Climagine participatory approach · National assessment to support implementation of the ICZM Protocol · Stakeholder consultation to support implementation of the ICZM Protocol · National consultation to support the launch of an Inter-Ministerial Committee 	
Management of Coastal Aquifers and Related Ecosystems	<ul style="list-style-type: none"> · Preparation of the Management Plan for the Damour Coastal Aquifer · National Assessment of Submarine Groundwater Discharges 	
Regional activities		
Coastal Zone Management	<ul style="list-style-type: none"> · Participation in the sub-regional training in support of ICZM Protocol implementation · Identification of gaps regarding coastal observation, to feed into a regional conceptual framework for coastal observation to monitor progress towards achievement of good environmental status of the coast · Access to and support for the MedOpen online training modules on ICZM, adaptation to climate change, building coastal resilience, marine spatial planning, and land use change analysis · Participation in annual Coast Day events 	
Management of Coastal Aquifers and Related Ecosystems	<ul style="list-style-type: none"> · Joint regional training modules on conjunctive surface and groundwater management 	
Program-wide communication and knowledge management	<ul style="list-style-type: none"> · Sharing of best practices as contribution to MedProgramme-wide Knowledge Management Strategy · Contribution of data and active use of the MedProgramme Knowledge Management Platform · Participation in IW:LEARN events 	

State of Libya

National activities		
Coastal Zone Management	1.	None

Management of Coastal Aquifers and Related Ecosystems		· National Assessment of Submarine Groundwater Discharges
Regional activities		
Coastal Zone Management	<ul style="list-style-type: none"> · Participation in the sub-regional training in support of ICZM Protocol implementation · Identification of gaps regarding coastal observation, to feed into a regional conceptual framework for coastal observation to monitor progress towards achievement of good environmental status of the coast · Access to and support for the MedOpen online training modules on ICZM, adaptation to climate change, building coastal resilience, marine spatial planning, and land use change analysis · Participation in annual Coast Day events 	
Management of Coastal Aquifers and Related Ecosystems	· Joint regional training modules on conjunctive surface and groundwater management	
Program-wide communication and knowledge management	<ul style="list-style-type: none"> · Sharing of best practices as contribution to MedProgramme-wide Knowledge Management Strategy · Contribution of data and active use of the MedProgramme Knowledge Management Platform · Participation in IW LEARN events 	

Montenegro

National activities		
Coastal Zone Management	<ul style="list-style-type: none">· Preparation of an ICZM Plan for the Boka Kotorska Bay area (Boka Bay) (applying the Climagine participatory approach) in synergy with the SCCF Project activity, which will mainstream climate change adaptation into this plan	
Management of Coastal Aquifers and Related Ecosystems	<ul style="list-style-type: none">· Preparation of the Priority Actions Plan for the Buna - Bojana Transboundary Coastal Aquifer· National Assessment of Submarine Groundwater Discharges	
Regional activities		
Coastal Zone Management	<ul style="list-style-type: none">· Participation in the sub-regional training in support of ICZM Protocol implementation· Identification of gaps regarding coastal observation, to feed into a regional conceptual framework for coastal observation to monitor progress towards achievement of good environmental status of the coast· Access to and support for the MedOpen online training modules on ICZM, adaptation to climate change, building coastal resilience, marine spatial planning, and land use change analysis· Participation in annual Coast Day events	

Management of Coastal Aquifers and Related Ecosystems	·	Joint regional training modules on conjunctive surface and groundwater management
Program-wide communication and knowledge management	·	Sharing of best practices as contribution to MedProgramme-wide Knowledge Management Strategy
	·	Contribution of data and active use of the MedProgramme Knowledge Management Platform
	·	Participation in IW:LEARN events

Morocco

National activities		
Coastal Zone Management	<ul style="list-style-type: none"> · Preparation of an ICZM Plan for the Tanger-Tétouan-Al Hoceima Region (applying the Climagine participatory approach) in synergy with the SCCF Project activity, which will mainstream climate change adaptation into this plan · National assessment to support implementation of the ICZM Protocol · Stakeholder consultation to support implementation of the ICZM Protocol · Coast Day central celebration dedicated to coastal resilience 	
Management of Coastal Aquifers and Related Ecosystems	<ul style="list-style-type: none"> · Preparation of the Management Plan for the Ras Jebel Coastal Aquifer · National Assessment of Submarine Groundwater Discharges 	
Regional activities		
Coastal Zone Management	<ul style="list-style-type: none"> · Participation in the sub-regional training in support of ICZM Protocol implementation · Identification of gaps regarding coastal observation, to feed into a regional conceptual framework for coastal observation to monitor progress towards achievement of good environmental status of the coast · Access to and support for the MedOpen online training modules on ICZM, adaptation to climate change, building coastal resilience, marine spatial planning, and land use change analysis · Participation in annual Coast Day events 	
Management of Coastal Aquifers and Related Ecosystems	<ul style="list-style-type: none"> · Joint regional training modules on conjunctive surface and groundwater management 	
Program-wide communication and knowledge management	<ul style="list-style-type: none"> · Sharing of best practices as contribution to MedProgramme-wide Knowledge Management Strategy · Contribution of data and active use of the MedProgramme Knowledge Management Platform · Participation in IW:LEARN events 	

Tunisia

National activities		
Coastal Zone Management	·	National assessment to support ratification of the ICZM Protocol
	·	Stakeholder consultation to support ratification of the ICZM Protocol
	·	National consultation to support the launch of an Inter-Ministerial Committee
Management of Coastal Aquifers and Related Ecosystems	·	Preparation of the Management Plan for the Rhiss-Nekkor Coastal Aquifer
	·	National Assessment of Submarine Groundwater Discharges
Regional activities		
Coastal Zone Management	·	Participation in the sub-regional training in support of ICZM Protocol implementation
	·	Identification of gaps regarding coastal observation, to feed into a regional conceptual framework for coastal observation to monitor progress towards achievement of good environmental status of the coast
	·	Access to and support for the MedOpen online training modules on ICZM, adaptation to climate change, building coastal resilience, marine spatial planning, and land use change analysis
	·	Participation in annual Coast Day events
Management of Coastal Aquifers and Related Ecosystems	·	Joint regional training modules on conjunctive surface and groundwater management
Program-wide communication and knowledge management	·	Sharing of best practices as contribution to MedProgramme-wide Knowledge Management Strategy
	·	Contribution of data and active use of the MedProgramme Knowledge Management Platform
	·	Participation in IW:LEARN events

4) INCREMENTAL COST REASONING, EXPECTED CONTRIBUTIONS FROM THE BASELINE AND CO-FINANCING, AND GLOBAL ENVIRONMENTAL BENEFITS

The GEF funding will work in synergy with and complement Government baseline programs – as delineated in SAP-MED, SAP-BIO and the NAPs – and programs funded by other sources and described in the section 2b) of the Baseline Scenario. Its incremental role will be developed along four main lines of action:

1. Supporting the implementation of NAPs (baseline contribution of Governments) and of other complementary actions (other co-financing) within a coherent regional framework characterized by the systematic application throughout the region of the ICZM principles enshrined in the Barcelona Convention Protocol;
2. Adding focus on the integration within the ICZM context of critical freshwater resources (groundwater) so far neglected and threatened by irreversible loss due to climate variability and human actions such as over-extraction and land use practices not respectful of the high vulnerability to contamination of coastal groundwater;
3. Aiming at the achievement of sustainable environmental stress reduction and improved climate resilience through strategic inter-sectoral coordination and innovation, such as conjunctive surface and groundwater management; and
4. Promoting the broader adoption of fully integrated coastal zone and water resources management policies and practices.

National initiatives, strategies and projects have been thoroughly discussed with the GEF Operational Focal Points to ensure that these processes were recently finalized, or under execution, or they will be executed over the lifespan of the MedProgramme. In all cases, the outputs and outcomes of these processes will be contributing to and reinforcing the environmental benefits generated by Child project 2.1, and more in general the objectives of the whole MedProgramme. Specifically:

Algeria will contribute with USD 4,551,270 in-kind co-financing to support the sustainable management of the coastal zones by the definition and reinforcement of climate change adaptation strategies and by protecting coastal habitat. These objectives are pursued by Algeria by financing national processes as well as local initiatives in several areas, namely: 1) update of the National Strategy for Integrated Coastal Zone Management; 2) the preparation of studies and analysis for local coastal plans; 3) the assessment of coastal vulnerability; 4) preparation of climate change adaptation plans; and 4) studies for protection and management of coastal areas.

Egypt will contribute with USD 4,064,000 in-kind co-financing to establish national Integrated Coastal Zone Management Strategy and a multipurpose monitoring network of groundwater, seawater and climate parameters, as well as supporting the engagement of all relevant stakeholders for these processes.

Lebanon will contribute with USD 231,363,600 co-financing to support the: 1) construction of waste water networks and waste water treatment plans all along the coast of Lebanon; the dumpsite rehabilitation on the coast of the city of Saida; and 3) the Environmental Resources Monitoring in Lebanon. All these initiatives will directly contribute to the sustainable management of the coastal areas of Lebanon, amplifying the environment benefits produced by Child Project 2.1.

Libya will contribute with USD 600,000 in-kind co-financing to support the protection of coastal habitats. The support will materialize through the financing of national and local initiatives aiming to: 1) updating the National Strategy for Integrated Coastal Zone Management; 2) preparing studies and analysis for local coastal plans; 3) assessing the coastal vulnerability; 4) preparing climate change adaptation plans and studies for protection and management of coastal areas.

Montenegro will contribute with USD 6,100,000 in-kind co-financing to directly support Integrated Resources Management Plan for Buna/Bojana area, including activities related to the treatment and disposal of wastewater, infrastructural work on the regulation of the Bojana River and projects that are supporting the implementation of the EU Water Framework Directive in the country.

Morocco will contribute with USD 176,909,600 in-kind co-financing allocated for initiatives that the Kingdom of Morocco is currently supporting to reduce pollution and to promote sustainable development in coastal areas. These initiatives include: The National Program of Liquid Sanitation, the National Household Waste Program, the Master Plan to Promote the Maritime Public Domain, the preparation of National Coastal Plans and the Monitoring Program for Bathing Waters.

Tunisia will contribute with USD 38,622,000 to support a comprehensive set of actions to enhance the management of the Ras Jebel coastal aquifer and its related ecosystems and to support national assessment and stakeholder consultation to support the ratification of the Barcelona Convention protocol for Integrated Coastal Zone Management.

The total co-financing committed by the project's countries (i.e. USD 462,210,470) will be monitored by the MedPCU and execution partners as well as discussed and analyzed at the inception meeting and following annual project Steering Committees.

The GEF funding will be variously distributed in all GEF eligible countries of the Mediterranean Basin in an effort to reconcile regional TDA priorities with national priorities and adhere to the MedProgramme's stress reduction and environmental security imperatives. Experiences gained in one country will be systematically shared regionally, so that all countries will benefit in terms of capacity to adopt and replicate good practices. Increased knowledge and scientific advances (e.g., submarine groundwater discharges) will be common patrimony of all Mediterranean countries and stakeholders and leverage both further research and practical applications.

The Global Environmental Benefits to be gained through the project, in line with the MedProgramme's overall global objectives, are:

- Improved integrity and sustainability of a globally significant transboundary large marine ecosystem – the Mediterranean Sea - and of the coastal ecosystem goods and services that it provides to society;
- Strengthened multi-country frameworks and transboundary cooperation;
- Increased resilience to the adverse impacts of climate change in vulnerable developing countries.

5) INNOVATION, SUSTAINABILITY AND POTENTIAL FOR SCALING UP

Innovation

The project presents a number of innovations directly derived from the strong emphasis of the MedProgramme on integrated land and water approaches, and from the evolution of the coastal areas discourse now focusing more and more on expanding the concept of ICZM to include consideration of freshwater resources and dependent ecosystems, managing conflicts at the water nexus, establishing sound groundwater governance frameworks, introducing conjunctive surface and groundwater management solutions.

Based on the experience from the implementation of the MedPartnership project, efforts towards converging management approaches have been designed in the two components of the project, and particularly in the implementation of the Integrative Management Framework for coastal zone land and water resources developed under MedPartnership. The project includes a number of other actions and approaches which are novel for the region, and in some cases even globally:

- Interventions that will focus on specific hot spots sites or critical coastal sections, selected with the countries for their expected high stress reduction and replication potential.
- The preparation of “Coastal Aquifer Management Plans” following the final recommendations of the recently concluded GEF Groundwater Governance Project and based on the TWAP Level 2 assessment methodology, which will be implemented for the first time globally.
- The translation of vulnerability to human actions and climatic events of coastal water resources and ecosystems into “Coastal Zone Land and Water Use Capability Units” and/or “vulnerability and suitability maps”.
- The inventory and assessment of submarine discharges of groundwater, something of high scientific and practical interests never attempted before and never considered as part of a marine environmental management initiative.
- Introduction of gender equality consideration not just in project execution modalities, but also and primarily as an integral part of coastal zone management and planning processes.
- Institutional sustainability promoted by consolidating national policy, planning and regulatory frameworks that support of sustainable coastal zone management and the provision and maintenance of coastal ecosystem services. The context of regional agreements, binding instruments and long-standing multi country cooperation established through the Barcelona Convention and its Protocols and previous GEF funded initiatives will foster sustainability and scaling up.

- Harmonized aquifer and coastal zone monitoring protocols and indicators, linked with interconnected databases, that will also improve management capacity and sustainability at both national and regional levels.

Sustainability

The sustainable provision of goods and services from coastal ecosystems is the overarching objective of the project. Ensuring the sustainability in time of the processes and outcomes that are expected to lead to the achievement of this objective was a special consideration during the entire project formulation process, as captured in the following points:

- The project is embedded within the MedProgramme and supportive of the implementation of the widely politically endorsed SAP-MED and related NAPs and of the ICZM Protocol to the Barcelona Convention.
- Project outcomes, outputs and activities are reflective of the needs and priorities, and existing plans and commitments of the project countries and associated regional and sub-regional governance bodies and development partners.
- For the coordination and execution of its actions, the project will build as much as possible upon those elements of the regional governance framework that are already solid and in place. To make this happen, major project co-executing arrangements will be made with those UN Agencies, Regional Activity Centres of the MAP system and NGOs that are well-established and have a formal long-term mandate that is key to the sustainable management in the region.
- The project will further embed as much as possible its activities within the context of ongoing native governance processes and target the delivery of project outputs and outcomes in alignment with key regional decision-making processes active during the project implementation period.
- By these means, and through the efforts of key project partners to further fully involve their constituencies, regional and national-level ownership over the project will be maximized.
- Taken together, the previous points will contribute to ensuring the continuity of efforts initiated, and the sustainability of outcomes achieved under the project, well beyond the project's own lifespan.

As highlighted in several sections of the project, the strategic engagement of private sector as well as the capacity building of national and local water associations and water users is a crucial element for long terms sustainability of the environmental benefits produced by the project. In this sense, particular attention will be put on engaging private sector, water associations etc. in targeted meeting, training and workshop. This will be particularly important for activities related to the ICZM and for activity 2.2.1 on national level stakeholder analysis for management of coastal aquifers, activity 2.2.3 on national dialogues identifying potential conjunctive management solutions, and activity 2.4.3 aiming to reach consensus on aquifer services. The entry point to reach and engage these stakeholders will be the ongoing national governance processes which already include representatives of these actors as illustrated in baseline section of this document.

Finally, please consider ways in which these points can be reflected clearly across relevant project outputs.

In addition to the above, please add language in the project document speaking to the need to pay special attention to the above stakeholders as the targeted stakeholders' involvement plan is developed at project inception.

Stakeholder buy-in

Active involvement of the wider set of stakeholders in project implementation is considered important to achieve buy-in for project processes and outputs, and is thus an essential factor of overall project success. Project partners will therefore promote and engage in the use of inclusive and participatory approaches. Special attention will be given to the involvement of women, indigenous groups and communities that are highly dependent for food and income on the coastal environment.

Replication and up-scaling of results

It is recognized that a major up-scaling of the project efforts in the region will be essential to achieve the overall longer-term objectives of the SAP-MED and the NAPs. The proposed 5-year project specifically aims at jumpstarting the implementation of the broader long-term action program.

Besides jumpstarting SAP implementation, through its two distinct Components the project has also been specifically designed to encourage and facilitate uptake of lessons learnt, and replication and up-scaling of best practices, within the Mediterranean region and beyond. Since the project is nested in the MedProgramme, it will benefit from the supporting platform provided by Child Project 4.1 specifically designed for such future replication/up-scaling within the region, for enhancing the human and institutional capacity, and fostering better coordination and collaboration among stakeholders, GEF focal areas and different donor initiatives.

[1] Indexes: combinations of indicators designed specifically for each case to address complex problems, such as for example assessing resilience to climate change impacts.

[2] Transboundary cooperation between Albania and Montenegro on water resources management is already foreseen in the implementation of [the Integrated Resources Management Plan for the Buna-Bojana area](#), developed under the MedPartnership. The Coastal Aquifer Management Plan for the Buna-Bojana coastal aquifer to be developed under Output 2.5 of Child Project 2.1 will be prepared in line with this wider management plan.

[3] Following adoption, the Coastal Aquifer Management Plan may be integrated (as appropriate) in existing natural resources management plans, for example in the case of the Buna-Bojana Coastal Aquifer, which is within the scope of the Integrated Resources Management Plan for the Buna-Bojana Area.

[1] The GEF Transboundary Waters Assessment Programme (TWAP) established two levels of indicator-based assessments for transboundary aquifers. Level 1 is a baseline assessment of ten core indicators; Level 2 builds on this baseline with an additional ten indicators.

[1] Note: the geographic scope of this activity is subject to modification, based on the expressed priorities and needs of the stakeholders in Lebanon.

[1] The creation of an IMC mechanism for Egypt will be undertaken in the context of Activity 1.3.1.

[2] The government of Egypt will provide some updated information during the inception phase of the project.

[1] UNEP/MAP-PAP/RAC, GWP-Med and UNESCO-IHP, (2015). An Integrative Methodological Framework (IMF) for coastal, river basin and aquifer management. Strategic Partnership for the Mediterranean Sea Large Marine Ecosystems (MedPartnership). Split, Croatia.

[1] While three main coastal aquifers were identified in the inventory prepared by UNESCO-IHP in the MedPartnership, it was only possible to obtain detailed information on one of these aquifers, the coastal aquifer of the Jafara Plain (North West Libya/Quaternary).

[1] The government of Egypt will provide some updated information on priorities during the inception phase of the project.

[1] The government of Egypt will provide some updated baseline information during the inception phase of the project. The approach will be inclusive, with participation from the civil society (local groundwater associations and coastal resources users). As such, citizen-science will be considered with the aim of empowering local community. Overall, the creation of an advisory group of experts will boost local capacities and knowledge transfer among scientists, society and administrations. creation of an advisory group

- The creation of an advisory group of experts will boost local capacities and knowledge transfer among scientists, society and administrations.

[1] United Nations Development Assistance Framework (UNDAF)

A.2. Child Project?

If this is a child project under a program, describe how the components contribute to the overall program impact.

The presumption underlying the MedProgramme design is that overall environmental security, the sustainability of the livelihoods of growing coastal populations and their resilience to the adverse impacts of climate change and variability will be improved by addressing (1) hot spots of coastal/marine pollution and habitat degradation, (2) implementing ICZM and nexus planning, introducing conjunctive surface and groundwater management, protecting coastal groundwater-related ecosystems and (3) conserving coastal/marine biodiversity. The MedProgramme's Theory of Change in fact builds on the notion that if hazardous chemical pollution and wastes production hotspots are eliminated and sustainable production and consumption practices adopted systematically; if the freshwater resource base of coastal zones is protected and increased through the reuse of treated wastewaters; if priority coastal aquifers are sustainably managed and/or protected from seawater intrusion (e.g., by artificial recharge schemes); if land uses in priority coastal zones are regulated respecting their intrinsic vulnerabilities and natural characteristics including coastal environmental and geological processes, and fostering gender equality; if the sustainability of the achievements so far in biodiversity conservation is strengthened; if transboundary cooperation will ensure harmonization of policies and

of monitoring procedures, then the coastal populations along the southern and eastern Mediterranean shores will benefit from improved health conditions, more stable livelihoods, gender equality and enhanced resilience to climatic change and variability.

The Child Project 2.1 will play a crucial role in achieving the desired impacts of the MedProgramme underlined above. It will do so by assisting countries, coastal zone managers and populations to protect and use sustainably the available coastal freshwater supply threatened by evolving climatic conditions, pollution, and competition at the water nexus, and to adopt coastal zone management and land use policies respectful of the intrinsic vulnerabilities, carrying capacity, and cultural, social and economic functions of the Mediterranean coasts and ecosystems. Consistently with the design of the MedProgramme, Child Project 2.1 will operate in synergy with all the other Child Projects under Components 1 and 2 addressing the reduction of pollution from nutrients and persistent toxic substances in coastal hotspots of (Child Projects 1.1, 1.2, 1.3), the reuse of treated wastewaters (Child Project 1.2), and the resolution of conflicts at the water nexus (Child Project 2.2). The synergistic interactions among these projects will trigger catalytic impacts that will be enhanced and disseminated throughout the region by the MedProgramme-wide knowledge management and coordination project 4.1. Last but not least, Child Project 2.1 will by design bring together various executing partners playing important roles and actively engaged in the region, but so far acting primarily in a fragmented and sectorial way – PAP/RAC, UNESCO IHP, GWP Med and Plan Bleu. Their interaction may prove very effective in producing long lasting beneficial impacts in coastal zone management approaches in the Mediterranean region, better integration of hydrological, geological and environmental sciences with land use and water resources planning; education with capacity reinforcement; monitoring with policy making.

The project will also foster compliance with a number of regional and global agreements, and support country efforts to achieve numerous targets of the Sustainable Development Goals, with focus on Goals 6, 13 and 15. The following Table 5 summarizes the project's contributions to the Agenda 2030 process.

Table 5: Contribution of Child Project 2.1 to the SDGs

Sustainable Development Goals	Contributions of Child Project 2.1
1. End Poverty in all its forms everywhere	Targets 5, 1. a
5. Achieve gender equality and empower all women and girls	Target 5
6. Ensure availability and sustainable management of water and sanitation for all	Targets 1, 2, 3, 4, 5, 6, 6.a, 6. b
8. Promote sustained, inclusive and sustainable economic growth, full productive employment and decent work for all	Targets 4, 9
12. Ensure sustainable consumption and production patterns	Target 2
13. Take urgent action to combat climate change and its impacts	Targets 1, 2, 3, 13. a
14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	Target 2
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss	Targets 1, 3, 5

A.3. Stakeholders

Please provide the Stakeholder Engagement Plan or equivalent assessment.

Successful coastal zone management and planning, including coastal aquifers, is based and fully dependent on the effective participation of all relevant stakeholders.

Stakeholder participation is an inherent part of the structure of MAP and the Barcelona Convention where all countries (represented by the MAP focal point) form the Contracting Parties to the Barcelona Convention. Within each country, MAP and its Regional Activity Centres have designated focal points that are responsible for the co-ordination of specific actions. In addition, about 100 NGOs and Intergovernmental Organizations, termed “partners” are participants to the meetings of the Barcelona Convention. It should also be stressed that stakeholders participated in the formulation of the TDA-MED, SAP-MED, SAP-BIO and countries’ NAPs, on which the present project is based. The activities of the project have been developed based on priorities of all participating countries, and all activities have been designed to involve all key stakeholders on a number of levels, from implementation, knowledge transfer, dissemination and replication. In summary, the key stakeholders (Table 6) on a national level include:

- Public Sector: ministries/entities responsible for water resources; environment; spatial and development planning; transport; tourism; fisheries; industry; maritime affairs; health; community development; education; culture; local government authorities.
- Private Sector: national and regional organizations representing: farmers; fisherfolk; manufacturers/industrialists; tourism and aquaculture sector; banks; insurance sector.
- Non-governmental Organizations (NGOs): national trusts; conservation associations; women’s organizations; community-based organizations (CBOs);
- Scientific community: researchers; sociologists; environmental managers; engineers (water, civil, environmental); environmental economists; biologists; climatologists, geographers, oceanographers; teachers; curriculum specialists; media practitioners.

Table 6: Typologies of stakeholders for Child Project 2.1

Type of organization	Examples	General roles, responsibilities in the project
National governments	Ministries responsible for: <ul style="list-style-type: none"> · Food Security (Fisheries, Aquaculture, Agriculture, Forestry) · Environment/ Sustainable Development · Tourism · Finance and Planning · Foreign Affairs · Energy and Mining · Meteorological Services; Coast Guards; Statistics;... 	Overall: <ul style="list-style-type: none"> · National governments should address transboundary issues · In execution of specific roles and responsibilities, national government agencies should develop and implement mechanisms to facilitate participation of stakeholders in the project and related programmes and projects Specific: <ul style="list-style-type: none"> · Develop, enforce, monitor and evaluate policies related to the shared marine/coastal resources (e.g. ministries responsible for environment, fisheries, finance, foreign affairs, tourism) · Lead or participate in development and implementation of national and regional programmes, projects and initiatives aimed at reducing habitat degradation, pollution and unsustainable freshwater abstractions. · Act as focal points of the project responsible for implementation at the national level · Collect, manage, analyze and share information relevant to the governance of the shared coastal/marine space

Type of organization	Examples	General roles, responsibilities in the project
National and regional private sector companies and associations	<ul style="list-style-type: none"> · Regional and national private sector associations (e.g. Hotel and Tourism Association, national chambers of commerce) · Individual large and medium-sized companies (e.g. fishing companies; hotels, restaurants, oil and gas companies; shipping companies, banks, insurance companies) · Small and micro enterprises and their associations (e.g. fishers and national fisherfolk organizations; tour operators and associations) 	<ul style="list-style-type: none"> · Overall: <ul style="list-style-type: none"> · Diverse group with varied and often competing interests, roles and responsibilities (e.g. oil companies are key stakeholders in pollution and habitat degradation issues rather than in unsustainable fishing, while water utilities are key stakeholders in addressing all transboundary issues) · Specific: <ul style="list-style-type: none"> · Provide and collect data and information on different aspects of the shared coastal/marine space and the factors affecting it · Assist in implementation of the policies and application of best practices to ensure that recommended environmental, safety and other standards and regulations are being met · Some private sector groups directly involved in decision making on the different transboundary · Assist in development of policies, regulations and plans related to the marine environment
National and regional academia and research institutes	<ul style="list-style-type: none"> · Research institutes for groundwater resources, marine biology, climate change science, 	<ul style="list-style-type: none"> · Conduct research and collect, manage, analyze and share information on the transboundary issues and climate change · Provide technical analysis and advice to national governments on policy implications of research · Assist in technical review and evaluation of policies at the regional and national levels
National and regional media	<ul style="list-style-type: none"> · State-sponsored television or radio outlets · Regional news agencies or journalists' associations 	<ul style="list-style-type: none"> · Assist in developing awareness about the value of the coastal/marine ecosystems and the services that they provide · Share information relevant to addressing the transboundary issues in the shared marine space · Act as independent 'watchdog' and investigate and communicate key issues to public

The following (Table 7) is a general list of national stakeholders, including mostly governmental bodies, civil society organizations, and academia, which was agreed upon with the countries. At the project inception, a more strategic and targeted stakeholders’ involvement plan will be presented, which will inform the design of stakeholder participation activities needed for the production of each project output.

During the project development phase, several additional relevant stakeholders were identified in the Mediterranean region. These stakeholders will not have a direct role in the project execution. Nevertheless, they will be involved in meetings, trainings and outreach activities by the executing partners of the Child Project 2.1. The complete list of national stakeholders for the project is provided in Annex P.

Special attention will be pay to the involvement of relevant private sector and water/coastal associations and users during the project’s inception phase, specifically during the elaboration of the project’s stakeholders involvement strategy.

Table 7 Key stakeholders for the Child Project 2.1

Outcomes and Outputs	Key stakeholders and partners (and role)	Other relevant stakeholders
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<p>Outcome 1: Coastal zone sustainability in beneficiary countries enhanced through the expanded compliance with the ICZM Protocol and the adoption of national ICZM strategies, coastal plans and instruments, and improved gender equality.</p> <p>Output 1.1: Multi-stakeholders' consultations on ICZM Protocol ratification and implementation.</p> <p>Output 1.2: Inter-Ministerial Coordination mechanisms for coastal management in place.</p> <p>Output 1.3: ICZM Strategies/plans developed and adopted.</p> <p>Output 1.4: A series of training events in ICZM, MSP and CVC adaptation developed and implemented.</p> <p>Output 1.5: Raised awareness on the approaches promoted by the project (with attention to the engagement of private sector)</p>	<ul style="list-style-type: none"> · UN Environment/MAP (Executing agency [EA]) <p>For the activities on ICZM:</p> <ul style="list-style-type: none"> · PAP/RAC (Executing partner [EP]) · Plan Bleu (EP) <p>For the Integrated Management Plan of the Damour area foreseen under Output 1.3:</p> <ul style="list-style-type: none"> · PAP/RAC (EP) · Plan Bleu (EP) · GWP-Med (EP) · UNESCO-IHP (EP) 	<p>Albania:</p> <ul style="list-style-type: none"> · Ministry of Tourism and Environment · National Coastal Agency · National Environmental Agency · National Agency of Protected Areas · Water Resources Management Agency · Ministry of Urban Development · Albanian Geological Survey · University of Tirana · INCA <p>Algeria:</p> <ul style="list-style-type: none"> · Ministry of Environment and Renewable Energy · National Commissariat of the Littoral · Ministry of Water Resources · Ministry of Housing, Land-Use Planning and City · National Institute of Cartography and Remote Sensing · National Observatory of the Environment and the Sustainable Development · National Agency for Climate Change · National Office of Statistics · General Directorate of Forests · National School of Marine and Coastal Sciences (ENSSMAL) <p>Bosnia and Herzegovina:</p> <ul style="list-style-type: none"> · Ministry of Environment and Tourism · Environmental Protection Department of the Ministry of Foreign Trade and Economic Relations · Federation of Bosnia and Herzegovina, Herzegovina-Neretva Canton
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<p>Outcome 2: Increased resilience to climatic variability and change, and enhanced water security of coastal populations through improved sustainability of services provided by coastal aquifers and by groundwater-related coastal habitats.</p> <p>Output 2.1: Detailed assessments of the current state of priority coastal aquifers and related coastal ecosystems, vulnerability maps and recommendations for land use planning addressing relevant stakeholders, including private sector, national and local water associations and water users.</p> <p>Output 2.2: National Dialogues identifying potential conjunctive management solutions, including stakeholders' training modules designed and implemented.</p> <p>Output 2.3: National Assessments of Submarine Groundwater Discharges and of Marine – Freshwater Interactions.</p> <p>Output 2.4: Priority aquifers coastal management plans produced including design and field testing of aquifer monitoring multi-purpose networks and protocols.</p> <p>Output 2.5 Facilitation of broader adoption of approaches promoted by the project with attention on long term sustainability and engagement of private sector, national and local water associations and water users.</p>	<ul style="list-style-type: none"> · UN Environment/MAP (EA) · UNESCO-IHP (EP) 	<p>Albania:</p> <ul style="list-style-type: none"> · Ministry of Tourism and Environment · Agency for the Management of Water Resources · Water Resources Management Agency (formerly Technical Secretariat of National Water Council) · Albanian Geological Survey · Academic institutions and Research Centres <p>Algeria:</p> <ul style="list-style-type: none"> · Urban Agency in charge of the Protection and Promotion of the Littoral and tourist areas of the wilaya of Algiers · National Commissariat of the Littoral · National Institute of Cartography and Remote Sensing · National Office of Statistics · Ministry of Water Resources <p>Bosnia and Herzegovina:</p> <ul style="list-style-type: none"> · Federal Geological Survey Bosnia and Herzegovina · Federal Ministry of Agriculture, Water Management and Forestry · Federal Ministry of Energy, Mining and Industry · Federal Institute for Hydrometeorology of Bosnia and Herzegovina · Federal Statistics Institute Statistics Institute · Ministry of Agriculture, Forestry and Water Management of Republic of Srpska · Karst Management Centre in Trebinje <p>Egypt:</p> <ul style="list-style-type: none"> · Coastal Zone Management Department of the Egyptian Environmental Affairs Agency (EEAA)
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Documents

Title	Submitted
<p>In addition, provide a summary on how stakeholders will be consulted in project execution, the means and timing of engagement, how information will be disseminated, and an explanation of any resource requirements throughout the project/program cycle to ensure proper and meaningful stakeholder engagement.</p>	
<p>Select what role civil society will play in the project:</p>	
<p>Consulted only;</p>	
<p>Member of Advisory Body; Contractor;</p>	
<p>Co-financier;</p>	
<p>Member of project steering committee or equivalent decision-making body;</p>	
<p>Executor or co-executor;</p>	
<p>Other (Please explain) Yes</p>	
<p>The participants in the National Dialogues to be organized by the project will include government ministries and agencies, nongovernmental/ civil society organizations, communities, academic and research institutions and the private sector, as well as partners and donors.</p>	
<p>A.4. Gender Equality and Women's Empowerment</p>	
<p>Please briefly include below any gender dimensions relevant to the project, and any plans to address gender in project design (e.g. gender analysis).</p>	

UN Environment and all the MedProgramme partner agencies are committed to supporting capacity development of its national partners to adopt approaches that advance women's rights and take account of the full range of their contributions to development. Involving both women and men in the Programme's activities is likely to increase project effectiveness and efficiency. Participation by both genders also improves project performance and improves the likelihood of sustainability. In other words, a project is more likely to achieve what planners hope it will achieve if women and men (both rich and poor and representing different sectors) are active participants and decision makers. (MedProgramme)

Gender mainstreaming and promoting women's empowerment are strategic and operational imperatives for the GEF. Having launched its initial gender policy in 2011, the GEF approved a reinforced policy in October 2017, shifting the focus from a *gender-aware do no harm* approach to a *gender-responsive do good* approach. Men and women have differentiated access to natural resources and, as a result, they are affected differently by changes to these resources and dependent livelihoods. Gender inequality and social exclusion increase the negative effects of environmental degradation on women and girls. Despite recent promising policy and legal reforms, and the full appreciation in the region that women in decision-making spaces can promote sustainable water resource use and management, persistent gender-discriminatory social and cultural norms, unequal access to land, water and productive assets, and unequal decision-making power continue to constrain women and men from equally participating in, contributing to, and benefitting from environmental projects and programs.

No water management assessment or diagnostic can be realistic without a gender perspective. And no decision-making is inclusive unless both women and men participate in the process. In line with the GEF Gender Equality Action Plan, the project will conduct a gender analysis as part of the ICZM planning process and of the preparation of management plans of priority aquifers, in order to systematically introduce gender responsive results frameworks and foster women's empowerment. Gender consideration will inform all activities and products of the proposed project, in particular fostering women's participation to all working groups, dialogues, consultations and awareness raising activities. A gender assessment for the project preparation phase of the Child Project 2.1 was conducted, and a gender action plan has been drawn up to reflect gender elements within the larger project framework (see Annex O). These are in line with the MedProgramme's overarching Gender Mainstreaming Strategy (Annex T).

In addition, the project will conduct national training courses to familiarize stakeholders in all project countries on gender analysis and indicators, and on sex disaggregated data collection, in order to assist countries in overcoming one of the key stumbling blocks to achieving a more robust gender-integrated national policy regime: the lack of comparable national data on gender-sensitive water indicators. International as well as national policy mechanisms are driven first and foremost by data. Without sex-disaggregated data, it is not possible to fully measure progress towards Sustainable Development Goals (SDGs). Without sound, scientifically collected data, it is difficult to make effective analytical assessments of the comparative situation of women and men in different communities, countries, or parts of the world. If data are not available on a topic, no informed policy will be formulated; if a topic is not evident in standardized databases, then, in a self-fulfilling cycle, it is assumed to be unimportant. IW:LEARN has promoted the indicator-based methodology for collection and analysis of key sex-disaggregated water data developed by UNESCO World Water Assessment Programme, with the purpose of creating a baseline knowledge related to water, from which gender progress can later be evaluated. Priority gender-sensitive indicators fall under five broad topics:

1. Water governance;
2. Safe drinking water, sanitation and hygiene;
3. Decision-making and knowledge production;
4. Transboundary water resources management; and

5. Water for income generation for industry and agriculture.

More specifically, the indicators relate to women's empowerment and participation in water decision- making, income generation, and unaccounted-for water-related working hours or ‘time poverty’.

A major objective of the project will be the development of supportive ICZM and coastal aquifers policy and frameworks, and of monitoring protocols harmonized across beneficiary countries. These efforts will also be aimed at ensuring that the gender perspective is successfully incorporated into environmental and ICZM policies and activities. It is expected that this objective will be achieved by:

- Identifying gaps in equality and developing strategies and policies to close those gaps;
- Considering gender issues in the mapping and analysis of coastal zone uses;
- Promoting women’s participation in awareness raising and training activities, while raising gender awareness and contributing to ‘male sensitization’ to these issues;
- Supporting educational activities, on topics such as the environment, energy, and decision-making in general;
- Involving women’s organizations: while the responsibility for implementing a gender approach does not rest solely with women’s organizations, they are natural vehicles for promoting gender equality at the local as well as the national level.

Balanced gender participation in project execution activities will be ensured, including in working groups, the MedProgramme Coordinating Unit, text drafting teams, etc. Gender consideration will be mainstreamed in all documents produced by the project, and particular attention will be paid to gender balance in monitoring and reporting activities. The project will work to ensure a balanced participation among men and women in the overall stakeholder involvement strategy and in consultation workshops and training programmes, and will support both women and men contribution individually, rather than assuming that both groups will benefit equally from gender-neutral development interventions

- 1) did the project conduct a gender analysis during project preparation? YES
- 2) did the project incorporate a gender responsive project results framework, including sex-disaggregated indicators? YES
- 3) what is the share of women and men direct beneficiaries (women X%, men X%)? NA^[1]

^[1] Share of women and men direct beneficiaries will separately defined in project targets during the Inception Phase and duly reported during project implementation.

Documents

Title

Submitted

Does the project expect to include any gender-responsive measures to address gender gaps or promote gender equality and women empowerment?

Yes

If yes, please upload document or equivalent here

During the PPG phase, a detailed gender analysis was carried out, and a comprehensive gender action plan was put together. Both are included in Annex O in the attached CEO Endorsement document.

If possible, indicate in which results area(s) the project is expected to contribute to gender equality:

Closing gender gaps in access to and control over natural resources; Yes

Improving women's participation and decision making Yes

Generating socio-economic benefits or services or women No

Will the project’s results framework or logical framework include gender-sensitive indicators?

Yes

See the logframe in attached CEO Endorsement document.

A.5. Risks

Elaborate on indicated risks, including climate change, potential social and environmental risks that might prevent the project objectives from being, achieved, and, if possible, the proposed measures that address these risks at the time of project implementation.

Table 8: Risks for Child Project 2.1

Risk	Level of risk	Mitigation measures
Lack of Political Support	Low	This risk is unlikely to materialize given that Child Project 2.1 design is the result of extended consultations with all beneficiary countries and responds to their stated priorities. The project moreover foresees joint execution teams for all activities, with external experts guiding and facilitating the work of national experts and government officials and representatives, who will be in charge in all major decision points.

Political instability	High	As stated in the MedProgramme Framework Document, “some southern and eastern Mediterranean countries are going through a period of political volatility and social unrest that might negatively affect the Program’s full implementation”. In view of this, Child Project 2.1 will be implemented only in those countries where conditions are considered stable and/or rapidly improving. It has to be fully appreciated that the deteriorated social conditions and migratory fluxes caused by economic, environmental, or political factors affecting parts of the coastal regions object of the project, call for urgent support from the international community, support of which the project represents a meaningful signal.
Climate Change and Variability	Moderate	Future climatic scenarios indicate the Mediterranean region as one of the most affected by climate change and variability, whose signs are already being felt particularly in the Southern and Eastern Mediterranean. Improving the resilience of coastal populations and ecosystems to climatic impacts – increased frequency, duration and intensity of droughts, sea level rise, increased evaporation – is in fact a key objective of the MedProgramme, and of Child Project 2.1 in particular. It is not expected that climate change will have an impact on the Child Projects execution. Nevertheless, climate change might be contributing to the instability of the region and to the migratory fluxes. Therefore, the project’s Steering Committee will have the authority to adopt contingency measures including changes in project activities and sites, to manage the potential adverse effects of unanticipated events.
Scarce coordination and synergies between the two project Components	Low	The project design revolves around only two major components: one, under the responsibility of PAP/RAC, dealing with the implementation of ICZM planning; the other, under the responsibility of UNESCO, dealing with coastal aquifers and groundwater governance. While cooperation and complementarities have been built in a number of project activities in both Components, there might remain some risk of poor communication and overlaps. To avoid this, the execution arrangements of the project establish ad hoc mechanisms for dialogue and joint decision making involving both executing agencies and country representatives.

A.6. Institutional Arrangement and Coordination

Describe the Institutional arrangement for project implementation. Elaborate on the planned coordination with other relevant GEF-financed projects and other initiatives.

The institutional arrangement and coordination of the Child Project 2.1 is illustrated in Figure 40.

MedProgramme Child Project 2.1 MEDITERRANEAN COASTAL ZONES: WATER SECURITY, CLIMATE RESILIENCE AND HABITAT PROTECTION

INSTITUTIONAL ARRANGEMENTS AND COORDINATION

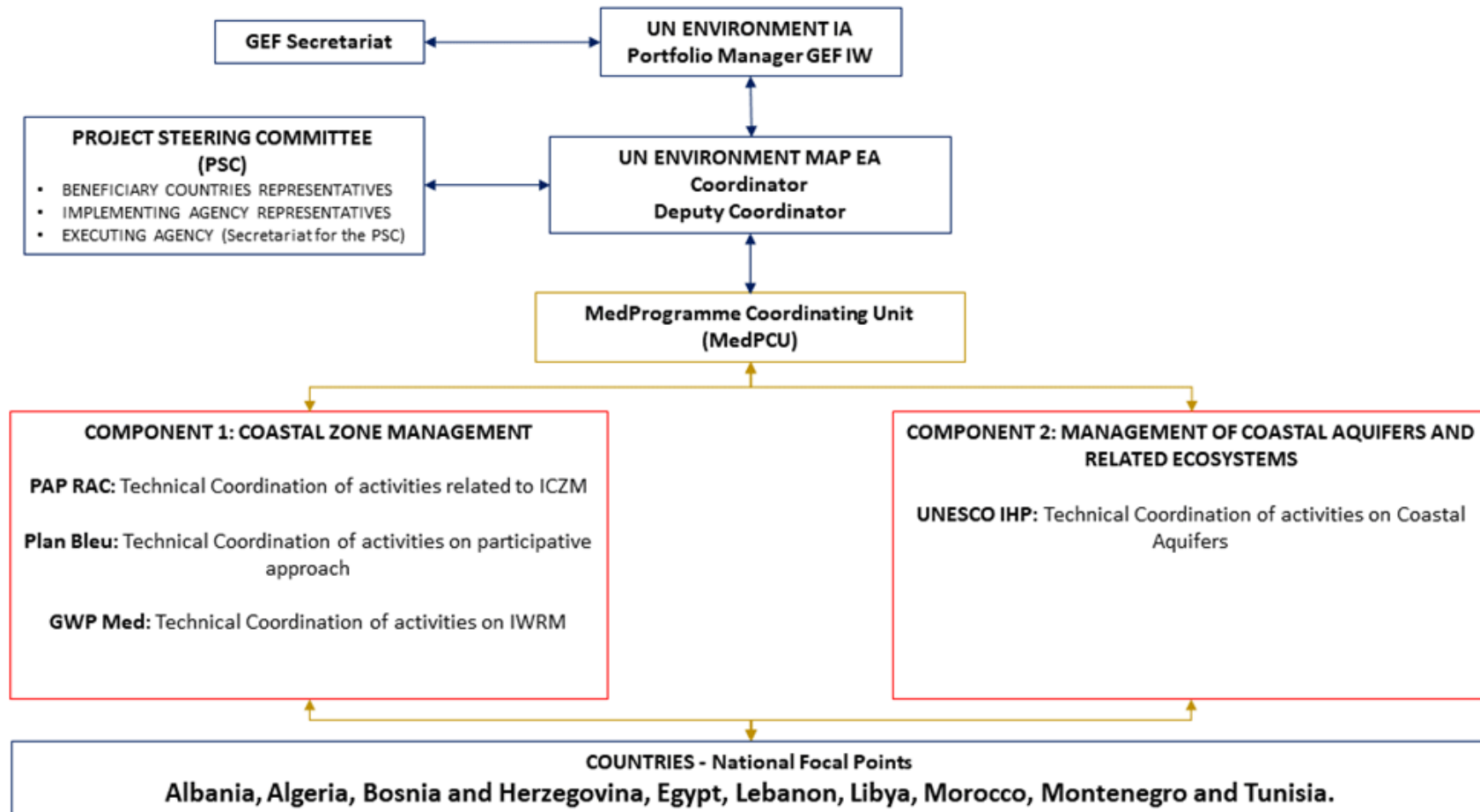


Figure 40 Institutional Arrangements and Coordination of Child Project 2.1

Implementing Agency (IA): The GEF Units in the Ecosystems Division of UN Environment will serve as Implementing Agency (IA) for Child Project 2.1. The IA will be responsible for overall supervision of the project and will oversee its progress through the monitoring and evaluation of activities and through progress reports. The IA will report on the project implementation progress to the GEF and will take part in the Project Steering Committee (PSC). The IA will provide guidance and oversight of project execution by the Executing Agency (EA) including through the review and approval of work plans, budget allocations and budget revisions proposed by the Executing Agency.

Project Steering Committee (PSC): The PSC will be established and will carry out the function of a Project Board. The PSC will consist of: 1) beneficiary countries, the IA and the Executing Agency (EA) representatives; and 2) the MedProgramme Coordinating Unit (MedPCU) acting as Secretariat for the PSC. These are the Members of the PSC. Countries will be represented at the PSC at a technical, decision making level, e.g. national focal points. Following the model of the PPG MedProgramme Regional Consultation Meetings, the PSC meetings will bring together International Water stakeholders, with parallel technical working sessions combined with plenary discussion and approval of workplans to maximize transparency and joint working across the two Focal Areas.

It is anticipated that to ensure an efficient use of the resources, PSC of different Child Projects of the MedProgramme will be organized back to back. These meetings will dedicate one session to inform the countries about the progress made by the entire MedProgramme followed by several sessions dedicated to specific decisions to be made by the countries for each Child Project.

The Executing Partners (EP) will intervene at the PSC to present the progress made and support the Secretariat for the PSC by providing background information on substantive and technical issues, as well as on modification to the Project Document and its annexes presented to the PSC by the MedPCU. The role of the PSC is to:

- Oversee the project;
- Provide overall guidance and ensure coordination among all parties;
- Provide overall supervision for project implementation;
- Approve the annual work plan and budget;
- Oversee the implementation of corrective actions;
- Enhance synergy between the project and other ongoing initiatives related to the GEF International Waters Focal Area;
- Ensure full coordination of the project with the entire MedProgramme.

Additional stakeholder representatives from private sector, academia, CSOs, NGOs, etc. can be invited to join the PSC during the project execution as observers. At all times, the PSC and its activities will comply with the policies, conditions and regulations of the UN and the GEF.

Executing Agency (EA): The UN Environment/Mediterranean Action Plan (UN Environment/MAP) will serve as the Executing Agency (EA) for the project. The EA will report on the project implementation progress to the IA (including those activities executed by the Executing Partners). The EA will organize the PSC and host the MedPCU which will act as Secretariat to the PSC. The EA will be responsible for, inter alia, the following required activities to achieve the project objectives, outputs and outcomes:

- Establishing, hosting and supervising the MedProgramme Coordinating Unit (MedPCU);
- Acting as Secretariat for the Project Steering Committee (PSC);
- Ensuring that the project is executed according to the agreed work plan and budget;
- Review and submit required reporting obligations to the IA, including quarterly expenditure reports and annual Project Implementation report (PIR);
- Ensuring all procurement is done in compliance with Agency standards;
- Communicating with and disseminating information to the Executing Partners (EP) and other stakeholders.

The EA will ensure that all activities, including procurement of goods and services, are carried out in strict compliance with the rules and procedures of UN Environment and GEF. The EA will be responsible for the establishment, adequate staffing and uninterrupted functioning, throughout the project's life span, of the MedProgramme Coordinating Unit (MedPCU).

MedProgramme Coordinating Unit (MedPCU):

During the project development phase of the Child Projects under the MedProgramme (GEF ID9607), particular attention was given to setting up a MedProgramme Coordinating Unit (MedPCU). The MedPCU was designed taking into consideration the high complexity of the MedProgramme. The staff under the MedPCU will have to deliver a multitude of cross-cutting functions across the Child Projects of the Programme. Moreover particular attention was given to cost efficiency by centralizing the overall Programme management into a single cost-cutting unit, thus avoiding duplication of project management units, functions, task and deliverables. This choice will also ensure timely and consistent execution of the Child projects of the MedProgramme, allowing at the same time transfer of lessons learned and cross-fertilization. It is anticipated that the MedPCU will be staffed with the following core positions:

- MedProgramme Coordinator (P4)
- Programme Officer CW (P3)
- Programme Financial Assistant (G5)
- Programme and Administration Assistant (G5)

In addition to this, the MedPCU operations will be supported during specific periods of the lifespan of the Child Project 2.1, by one Gender Specialist, one Knowledge Management Specialist and by a regional expert on ICZM and IWRM, to be engaged through out-sourced contracts. The proposed organigram for the PCU is:

MEDPROGRAMME COORDINATING UNIT (MEDPCU) ORGANIGRAM

MedProgramme Child Project 2.1 MEDITERRANEAN COASTAL ZONES: WATER SECURITY, CLIMATE RESILIENCE AND HABITAT PROTECTION

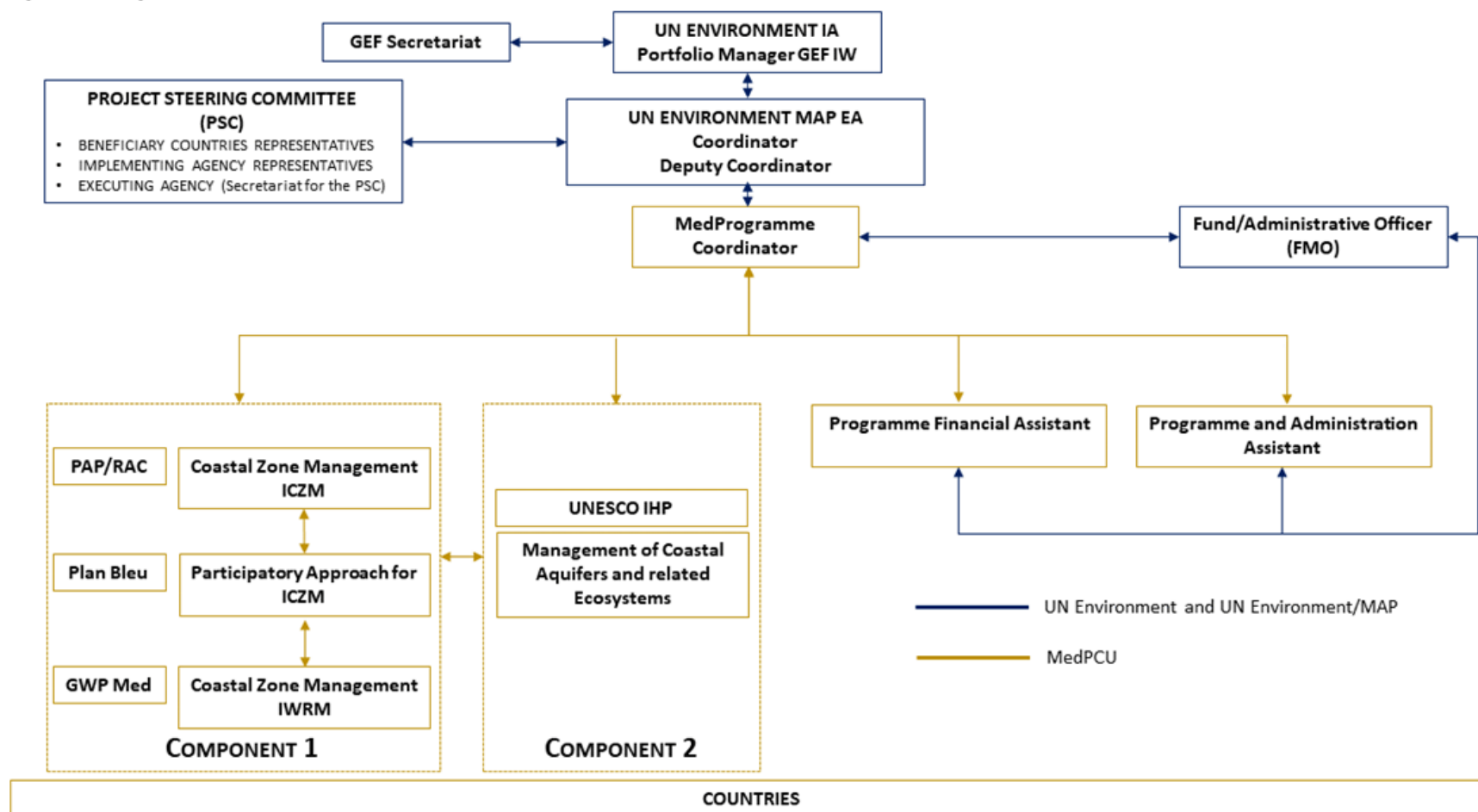


Figure 41 Organigram of the MedProgramme Coordinating Unit

The MedPCU will be established, hosted and supervised by UN Environment/MAP (Barcelona Convention). The MedPCU will ensure coordination across the entire MedProgramme and the consistent execution of the seven Child Projects implemented by UN Environment and executed by MAP (Barcelona Convention), as well as the Child Project implemented by EBRD. In terms of MedProgramme coordination, the MedPCU will provide management functions to the Child Projects implemented by UN Environment and executed by UN Environment/MAP and EBRD.

The Unit will be responsible for, inter alia, the following tasks:

Child Project 2.1 management services:

- Manage the flow of information from the field and produce periodic monitoring reports, namely quarterly financial expenditure reports; annual expenditure forecasts and procurement plans; half-yearly narrative reports of progress including the annual Project Implementation Review;
- Initiate, validate, sign and implement legal instruments with all bilateral partners including executing partners and countries where appropriate;
- Organize travel and payment of DSA for staff and consultants as needed;
- Coordinate and support the project activities of PAP/RAC, Plan Bleu and GWP Med (Component 1), and UNESCO IHP (Component 2);
- Organize the meetings of the Project Steering Committee (PSC) and serve as its Secretariat;
- Ensure the Project governance and oversight of the financial resources from the GEF investment and the co-financing delivered by the Project stakeholders.

Programmatic coordination:

- Ensure that the execution of the entire MedProgramme is aligned and integrated with the priorities of the Contracting Parties to the Barcelona Convention, its 2016-2021 Mid-Term Strategy and biennial Programmes of Work;
- Ensure that the execution of the MedProgramme Gender and Knowledge Management Strategies is consistent across the entire Programme.
- Establish a mechanism to monitor and evaluate progress towards the objectives of the MedProgramme as a whole.

MedProgramme Visibility:

- Represent the MedProgramme in global events and initiatives.
- Ensure that the Programme Annual Stocktaking Meeting is organized in a coordinated manner to efficiently serve the countries, IA, EA and stakeholders;
- Share the Project achievements, products/outputs with the Project and MedProgramme's stakeholders;

Technical support (refer to detailed deliverables in Table 10 below):

- Provide staff time and expertise in guiding and advancing the execution of technical activities under the Project;
- Coordinate with administrative and technical staff on drafting and compiling tender documents as needed; advertise tenders where relevant; convene and/or contribute to tender review committees where appropriate;
- Coordinate with administrative and technical staffs on drafting and compiling tender documents as needed; advertise tenders where relevant; convene and/or contribute to tender review committees where appropriate

The cost of the MedPCU will be covered by PMC, cash co-financing provided by the Barcelona Convention and to a minor extent, by the projects budget as detailed in Table 9. The latter, will be allocated specifically for Child Project 2.1 to run technical and substantive tasks as described in Table 10 below.

Table 9: Details of the budget allocated for the MedPCU

MedProgramme Coordinating Unit (MedPCU)		Budget Allocated for the MedPCU US\$		Total US\$
	GEF Grants	PMC ¹	Technical Tasks ²	PMC+Technical Tasks
Child Project 1.1 (GEF ID 9684) ³	14,250,000	677,000	760,000	1,437,000
Child Project 1.2 (GEF ID 9717)	5,000,000	90,000	-	90,000
Child Project 2.1 (GEF ID 9687)	7,000,000	333,000	90,000	423,000
Child Project 2.2 (GEF ID 9685)	3,500,000	166,000	84,000	250,000
Child Project 3.1 (GEF ID 10158)	1,376,147	65,500	58,500	124,000
Child Project 4.1 (GEF ID 9686)	2,500,000	119,000	95,000	214,000
SCCF Project (GEF ID 9670)	1,000,000	80,000	5,000	85,000
Total GEF Grants	33,626,147	1,530,500	1,092,500	2,623,000
Staffing costs as %:		5%	3%	8%

1: Including travel costs of the MedPCU's staff.

2: Details of the technical tasks executed by the MedPCU's staff are provided under the sections A.6 of the GEF CEO Endorsement Request Template and in Annexes E (Annex O for CP1.1 - 9684), of each child project submission package.

3: Breakdown of the 760,000 allocated for Technical Tasks: 485,000 US\$ from CW grants for the Programme Officer CW and 275,000 US\$ from IW grants for the technical support on TDA of the Med POL Officer.

Table 10: Deliverables and costing of the MedPCU technical support

<i>Position Titles</i>	<i>\$ / Person Month, Est Person Month</i>	<i>Tasks to Be Performed / Deliverables</i>	<i>Related workplan activity</i>
PCU Technical support			

International Waters

P4 MedProgramme Coordinator	17,900 / 5	<ul style="list-style-type: none"> · Oversees the technical execution and develop technical products for Child Projects 2.1 · Directs the organization of the MedProgramme's Annual Stocktaking Meetings, ensuring that the technical contribution of Child Project 2.1 is enriching the meeting as well as aligned with the other Child Projects of the Programme. · Directs review of relevant documents and reports; identifies priorities, problems and issues to be addressed and proposes corrective actions; liaises with relevant parties; identifies and initiates follow-up actions. · Directs the preparation of Child Project 2.1's specific technical documents for the organization of the MedProgramme's Annual Stocktaking Meetings, ensuring that they are organized in a coordinated manner to efficiently serve the Contracting Parties, implementing agencies, executing agencies and stakeholders. · Directs review of relevant Child Project 2.1's specific technical documents and reports; identifies priorities, problems and issues to be addressed and proposes corrective actions; liaises with relevant parties; identifies and initiates follow-up actions. · Supports for the implementation / ratification of the ICZM Protocol · Contributes to national consultations in support of ICZM Protocol ratification · Contributes to the establishment or enhancement of Inter-Ministerial Coordination (IMC) frameworks. · Contributes to National Dialogues identifying potential conjunctive management solutions. · Contributes to the producing materials for awareness raising campaigns for Child Project 2.1 · Participates in dissemination and awareness raising activities at the regional and global levels campaigns for Child Project 2.1 	Cross-cutting (all Child Project 2.1 workplan activities)
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Execution at National Level: The Beneficiaries Countries will designate a National Project Focal Point (NPFP) during the inception phase. The NPFP will act as the liaising person between the government, the EA and EP. The NPFP will be fully involved in the selection of the national consultants and experts which will support the execution of activities on ground under Components 1 and 2 of the Project. The NPFP will also facilitate collaboration with other country offices, as well as the MedProgramme Coordinating Unit (MedPCU). Moreover, special attention will be given in all countries to overcoming fragmentation across sectors in decision making related to project's goals and activities.

Executing Partners (EP): The EP will execute activities of the project that fall within their core areas of expertise. They have been identified among (sub) regional institutions, UN and non-governmental organizations, on the basis of their mandates and broadly recognized roles and comparative advantages of in thematic areas of work relevant to the Project and MedProgramme. Based on these criteria, the EA will establish:

- Inter-agency agreement (Letter of Agreement – LOA) with the International Hydrological Programme (IHP) of UNESCO;
- Project Cooperation Agreement (PCA) with the MAP Regional Action Center PAP/RAC
- Project Cooperation Agreement (PCA) with the MAP Regional Action Center and Plan Bleu; and
- Project Cooperation Agreement (PCA) cooperation agreement with the Global Water Partnership – Mediterranean (GWP Med).

These arrangements will be established with full consideration of the applicable UN Environment and GEF principles and procedures, including cost-efficiency and effectiveness.

PAP/RAC, Plan Bleu and GWP will be executing the national and regional activities foreseen under Component 1 of Child Project 2.1. UNESCO-IHP will be the executing the national and regional activities foreseen under Components 2 of the of Child Project 2.1.

Please refer to Annex H - Project Implementation Arrangements for further details on the specific roles and tasks of the MedPCU and the Executing Partners.

Additional Information not well elaborated at PIF Stage:

A.7. Benefits

Describe the socioeconomic benefits to be delivered by the project at the national and local levels. How do these benefits translate in supporting the achievement of global environment benefits (GEF Trust Fund) or adaptaion benefits (LDCF/SCCF)?

The project will bring about a wealth of benefits at the national and local levels:

- Improved water security due to the introduction of conjunctive surface and groundwater management practices;
- Higher quantity and better quality freshwater supply thanks to improved knowledge and management of coastal aquifers;
- Improved quality of seawater due to the introduction of ICZM policy frameworks and practices;
- Improved health and better and more sustainable livelihoods of coastal populations resulting from increased water security and introduction of ICZM;
- Enhanced sustainability of coastal zone and shallow marine resources based on the adoption of nation-wide ICZM strategies and plans in compliance to the ICZM Protocol of the Barcelona Convention;
- Improved health and sustainability of coastal habitats (humid zones, wetlands, coastal lagoons, sea grasses, etc.) and of living marine and freshwater resources;

- More sustainable tourism and of other socio-economic activities through the introduction of land-use capability maps;
- Improved gender equality by mainstreaming gender consideration in ICZM policies and practices, and in aquifer management.

These national or local benefits will all be derived through actions also aimed at accruing global benefits in line with the provisions of the GEF Instrument. Global benefits will relate to (i) restored integrity of a globally significant transboundary large marine ecosystem and of its coastal areas through multi-country cooperative actions; (ii) more effective protection of globally significant coastal ecosystem goods and services through enhanced transboundary cooperation.

A.8. Knowledge Management

Elaborate on the Knowledge management approach for the project, including, if any, plans for the project to learn from other relevant projects and initiatives (e.g. participate in trainings, conferences, stakeholder exchanges, virtual networks, project twinning) and plans for the project to assess and document in a user- friendly form (e.g. lessons learned briefs, engaging websites, guidebooks based on experience) and share these experiences and expertise (e.g. participate in community of practices, organize seminars, trainings and conferences) with relevant stakeholders.

The Child Project 2.1 will be managed under the umbrella of the MedProgramme, which is composed of eight Child Projects addressing the GEF focal areas of International Waters, Chemicals and Waste, Biodiversity and Climate change. Effective knowledge management (KM) is a core leveraging mechanism of the MedProgramme to achieve up scaling of approaches, policies and technologies promoted by the Programme at multiple scales. The Knowledge Management Strategy (Annex S) will be implemented under Child Project 4.1 and will support the KM activities of all Child Projects, maximizing their effectiveness in providing opportunities for south-south learning, fostering intergovernmental cooperation, using monitoring and evaluation (M&E) tools and geospatial services, applying best practices and developing portfolio-wide training and communication strategies.

A centralized system coordinated by the MedProgramme Coordination Unit (MedPCU) is designed to capture, digest and share the vast amount of information and knowledge generated across the MedProgramme portfolio with its intended audiences and stakeholders. Each Child Project participates in the common knowledge management (KM) strategy in order to maximize efficiency, ensure good governance of the portfolio and achieve greater impact at the different functional levels identified (portfolio level, general public level and policy- and decision-making level).

The full KM Strategy of the MedProgramme is annexed to each Child Project document for transparency and ease of reference.

While specific needs related to the diverse outputs of the individual projects will be analyzed on a case-by-case basis, all Child Projects are expected to contribute to the overall MedProgramme KM activities as described in the following text (included in the project documents of each of the Child Projects).

KM Platform

A web-based knowledge hub comprised of a data and information management system (with both public and restricted access) and a combination of visualization tools to serve the portfolio's needs will be implemented by the MedPCU in close consultation with all Child Projects. The integrated platform will host: (1) a project management/coordination tool; (2) a public portal including sub-webpages for each Child Project; (3) visualization tool(s) to display digitalized representation of data through GIS and other suitable means; and (4) a database for raw/primary data.

Child Projects are expected to contribute to each of these components as follows:

1. Upon initiation of the MedProgramme, every Child Project will receive specific training on how to use the project management tool selected by the MedPCU. Features powered by this tool include (but are not limited to): automated reporting, task monitoring, calendars, live editing, Gantt-Charts, time tracking, encrypted security, back-ups, file management and cloud repository, integration with other products, role-based access control, mobile apps, email integrations, and discussion boards. Project managers (and designated project collaborators) are expected to use the tool to facilitate communication and information exchange throughout the MedProgramme, promote knowledge sharing and peer-to-peer learning, ensure tracking and monitoring of progress, and meet their reporting requirements for the MedPCU.
2. The outward-facing portal will be populated with key information showcasing progress towards impact and the contribution of the MedProgramme to global and regional environmental goals. In addition to the umbrella portal, each Child Project will have dedicated sub-pages for their specific projects. The Child Projects are expected to provide regular information (in different multimedia formats) to generate content for their respective project sub-pages and the overall programme portal. The MedPCU will be responsible for curating the information provided and packaging them for the intended audiences.
3. One or more visualization tools will be used to display information generated by each project. Different types of data (be them quantitative, normative or qualitative) are best visualized through a variety of ways, such as GIS, story maps, map dashboards, infographics, trend line charts, etc. Child Projects will be prompted to submit their inputs on a rolling basis to make sure that every result/achievement is captured through one or more of these tools.
4. A shared data model/protocol will be agreed at the beginning of the MedProgramme to ensure that projects will compile relevant data with a standardized approach and enable a harmonized data entry system. Issues related to open data, ownership, quality and review of data will be addressed in this exercise; a mapping of voluntary standards will help to evaluate feasible options. Raw/primary data will be stored in a database with flexible restricted/public access.

Milestone Events

Annual Stocktaking Meetings

All project partners are expected to attend, and meaningfully participate in, the Annual Stocktaking Meetings of the MedProgramme. These are major regional events organized by the MedPCU in cooperation with all Child Projects and country representatives and will take place on a rotation basis in different project countries. The meeting will involve: all Child Projects and Governments of the participating countries, the MedProgramme's implementing and executing agencies, the GEF Secretariat and Independent Office of Evaluation (IOE), Convention Secretariats, the UN Environment Global Program of Action (GPA), as well as major regional and global NGOs, representatives of those Mediterranean countries not participating in the MedProgramme, bilateral and multi-lateral donors, IFIs, the UfM, other regional intergovernmental organizations (Sahara and Sahel Observatory, etc.), and major private sector coastal area actors, water users, tourism associations and the shipping industry. Representatives of faith-based leaders, women's organizations, youth organizations, fashion/art/sport testimonials, media specialists, among other relevant groups will also be invited to participate in these events, following a dedicated stakeholders' analysis.

These meetings aim to establish synergistic interactions among Child Projects, and with other relevant initiatives and stakeholders, including with all other Mediterranean countries not participating in the MedProgramme. The Annual Stocktaking Meetings will provide an opportunity to all Child Projects to showcase their implementation advancement, progress towards impacts and problems encountered, and to engage with a broad audience of peers and stakeholders sharing similar objectives within the overarching goal of achieving environmental security in the Mediterranean Basin. The Annual Stocktaking Meetings will be an occasion for face-to-face knowledge exchanges, south-south and north-south learning, and promotion of the broader adoption of MedProgramme approaches and solutions. The participation of regional and global media will raise public awareness across the Mediterranean countries and beyond. The design, objectives and architecture of the Annual Stocktaking Meetings will be defined during the first year of MedProgramme operation and approved at the Child Project 4.1 Steering Committee level. Child Projects will be informed about modalities for their contributions in detail. The first Annual Stocktaking Meeting will be held during the second year of MedProgramme execution.

GEF events

The MedProgramme will be featured in all relevant GEF events and activities involving the four focal areas addressed by the Programme (International Waters, Chemical and Waste, Biodiversity and Climate Change). For the IW focal area see "Synergies with IW:LEARN".

Global events

Experiences and lessons learned from the MedProgramme will be of relevance for a number of global processes shaping policies related to the sustainable management of natural resources in coastal areas. Participation in selected global and regional events, as well as in significant ongoing awareness raising campaigns, will be evaluated by the MedPCU

according to relevance and impact criteria. Child Projects will contribute to these events in different forms, ranging from physical attendance, production of specific products, content and multimedia material to be packaged in suitable products.

Launching/Closing events of the MedProgramme

The design and practical details of these events will be planned during the inception phase of the MedProgramme. Considering the staggered initiation timeframes of the different Child Projects, a launching event of the MedProgramme could be organized in the form of a press conference to coincide with the kick-off of the Support Child Project 4.1. Basic communications material about the objectives of the MedProgramme (such as visual identity, slogan, mission statement, description of Child Projects, informative brochure, short promo video, basic online pages, etc.) should be prepared prior to the launching event. Project managers will be timely informed about practical details of these events and modalities for contribution.

Sharing knowledge and building capacity

One of the objectives of the MedProgramme is to improve the capacity of key regional stakeholders and build socio-economic resilience of impacted communities. To this end, a series of knowledge exchanges will take place at different levels taking inspiration and practical lessons learned from the GEF Partnership (reflecting the wealth of experience and examples from projects and programs around the world) and other relevant Organizations involved.

At the portfolio level, the MedPCU will capacitate Child Project teams with knowledge and training that can help them to deliver better project results and achieve greater impact. The identification of topics and modalities of exchange (face-to-face, virtual meetings, Communities of Practice, Expert visits, Study Tours, manuals, among others) will be defined at the beginning of the Programme implementation. Preliminary topics could include:

- 1) Gender mainstreaming and stakeholders' engagement;
- 2) Scientific communication: bridging the gap between scientists/technical practitioners and media specialists;
- 3) Lessons learned from the MedPartnership and the ClimVar and ICZM projects.

It is expected that these knowledge exchanges will further empower project stakeholders, enhance cooperation, strengthen the institutions they represent and ultimately influence policies and norms for better management of natural resources in coastal areas.

Additionally, Child Projects will participate in learning exchanges by twinning with other relevant GEF IW projects as facilitated by the GEF IW:LEARN Project (see more below).

Moreover, the MedPCU will support specific capacity building activities foreseen by each Child Project by taking stock and amplifying results through the programme-wide outreach.

Communication, outreach and awareness raising

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MedProgramme identity

In terms of visibility, the MedProgramme will be presented in a holistic and coherent way (i.e. clear vision statement and positioning, visual identity, logo design, etc.) showing consistency and integration across the portfolio. At the same time, each Child Project will be granted individual identities within the overall MedProgramme-branding in order to promote specific activities and benefit from ad hoc services. This will entail the design of consistent logos for each Child Project, creation of sub-websites within the MedProgramme web-portal, organization of tailor-made trainings, preparation of specific publications, social media services, among others.

To this end, the MedPCU will develop, in close consultation with project managers of all Child Projects, a proposal and, once adopted, all Child Projects are encouraged to use it consistently.

Newsletters (Med Bulletin)

Periodic MedProgramme Bulletins will be published (every six months or on a quarterly basis) to showcase progress of the Programme as a whole and of individual Child Projects, including highlights of results, success stories and project events, and relevant global, regional and national relevant meetings and events. It will be one of the primary tools for tracking achievement of targets and milestones for all Child Projects, based upon the corresponding results frameworks. Bulletins will feature a “journalistic” style making the content appealing for a wide range of audiences. Therefore, all CPs are expected to contribute to these Bulletins with different types of inputs in order to document their activities and progress, such as high-quality pictures, articles, statistics, quotes, interviews, footage, among others. The MedPCU will inform all Child Projects about the format of these bulletins and the corresponding timelines for submission.

Storytelling for advocacy

A number of traditional storytelling instruments will be blended with innovative and creative approaches to increase dissemination and advocacy efforts. Particular emphasis will be given to the preparation of high-quality short movies and animations, graphic novels, documentaries, podcasts/radio programmes, infographics, digital interactive stories/articles/interviews, microblogging, e-books, art exhibits, among others. The MedPCU will inform Child Projects about the type of multimedia material that will be necessary to collect for the preparation of these products.

Translations of key communications outputs will be carried out in English, French and Arabic to ensure ample dissemination in the participating countries. Specific translations in other national languages will be considered in light of budget constraints and upon due evaluation of stakeholders' needs.

Social Media

Facebook, Instagram, YouTube and Twitter are four social media tools suggested for use by the MedProgramme. Development of timely and appropriate content and material to populate these channels is indispensable to achieve the desired impact. CPs will be prompted to contribute with relevant and ad-hoc information, pictures, statistics and other data to enrich the social media campaign.

The use of hashtags will be coordinated with the GEF IAs and EAs and project and country representatives of the Programme in support also of other related initiatives and campaigns.

The registration on the above-mentioned channels (or a selection of them) will take place at the beginning of the Programme and content population will start as soon as data and information from the projects becomes available.

Engagement with media and testimonials

To maximize impact of the MedProgramme and share its findings and results with the widest possible audience, the MedPCU aims to reach out to a different number of media outlets and journalists with a view to establish long-lasting collaborations. To this end, Child Projects will be asked to facilitate contacts with national and local media of the countries where the activities are implemented (for instance, by providing the MedPCU with a list of relevant contacts). A series of direct interactions with communications specialists, media experts and social media influencers is foreseen by the KM Strategy throughout the duration of the Programme to increase mutual understanding and flow of information.

The MedPCU also aims to reach out to renowned personalities from different realms (such as art, sports, entertainment or fashion) to act as ambassadors for the MedProgramme and raise awareness about the main environmental challenges (and solutions) in the coastal areas of the Mediterranean. The Child Projects will be prompted to suggest names, and facilitate contacts when possible, of suitable and potential “goodwill ambassadors” of relevance in the region.

Synergies with the GEF IW:LEARN and LME:LEARN Projects

The MedProgramme will closely collaborate with the GEF International Waters Learning and Resource Exchange Network (IW:LEARN) Project[1] to facilitate uptake of lessons learned and knowledge exchange from/to the MedProgramme portfolio.

Cooperation in the following activities will be particularly addressed:

- Participation to the GEF International Waters Conferences (landmark biannual events of the IW portfolio). The first MedProgramme contribution is expected for the 10th edition of the IWC in 2020.
- Production of Experience Notes (short case studies) produced by Child Projects to showcase worthy results and disseminated through IW:LEARN channels and the MedProgramme KM platform. The format of Experience Notes is standard (<https://iwlearn.net/documents/experience-notes>)
- Participation to IW:LEARN Twinings with other GEF relevant projects and programs.
- Contribution to IW:LEARN.net with specific content (i.e. data visualization).
- Contribution to social media, news, events, etc.
- Participation to GEF Communities of Practice (CoPs) on IW, CW, when relevant.

Strengthening the Science-Policy Interface (SPI) and Influencing Decision-Making

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Replication Atlases

A number of highly informative National Replication Atlases, translated in relevant languages, will be produced to stimulate replication of successful practices demonstrated by the Programme and encourage regional and global dialogue. Broader adoption and replication of the successful policies, practices and technologies implemented under the Programme will be promoted through these means, highlighting areas and situations where replication of the Programme’s demonstrations should preferentially occur.

Relevant results of Child Projects will be featured in the Atlases and the MedPCU will inform about the participatory process to collect and present the inputs.

Technical reports and scientific publications

The MedPCU will ensure that relevant scientific reports and scientific peer-reviewed publications are prepared by the various CPs providing technical information about the achievements of the Programme.

Specific guidance on how to concretely contribute (format, frequency, purpose, etc.) to each of the aforementioned activities will be provided during the initial phase of the Programme as a result of targeted consultations carried out by the MedPCU.

Specific synergies with Child Project 2.1 regarding knowledge management

Child Project 2.1 has the overall objective to *improve water security, human and ecosystem health, and climate resilience in coastal hot spots*, and features two main outcomes:

1. Coastal zone sustainability in beneficiary countries enhanced through the expanded compliance with the ICZM Protocol and the adoption of national ICZM strategies, coastal plans and instruments, and improved gender equality.
2. Increased resilience to climatic variability and change, and enhanced water security of coastal populations through improved sustainability of services provided by coastal aquifers and by groundwater-related coastal habitats.

A large effort is dedicated to raising awareness about the current and projected pressures on water resources, in particular on aquifers as major freshwater resource, and on ecosystems in coastal areas in order to strengthen the policy-science interface and influence positive individual and collective behavior. Awareness raising will focus on the interconnected themes of natural habitats, biodiversity and landscapes, and the emissions of nutrients and wastewater, solid waste, marine litter and microplastics, and industrial waste into the environment. Future sustainability will depend on the proper management of natural resources based on a nexus (space/water/food/energy/ecosystem) approach and the integrated coastal zone management (ICZM) principles, thus allowing integration between environmental protection with spatial planning and economic development. The active participation and empowerment of all stakeholders concerned is key to unravel the interconnected challenges faced in coastal areas, hence capacity building and awareness raising are fundamental ingredients to shape a responsible society. The stakeholders' analysis foreseen at the beginning of the project will be very important to target KM beneficiaries/providers, provide adequate information and facilitate active involvement in the project activities.

The portfolio-wide architecture developed for the KM of the MedProgramme will support these efforts to amplify the project results and maximize their impact at all functional levels identified (internal, corporate and external).

As the project will produce a number of detailed assessments (for example, pioneering the inventory and mapping of submarine groundwater discharges and marine/freshwater interactions) as well as other data needed for the elaboration of ICZM plans, this information will be featured using GIS-based and other types of visualization tools in the MedProgramme KM online platform and also “digested” and packaged in different outreach products. The most suitable instruments to visualize project results and different types of quantitative and qualitative data (which include but are not limited to number of hectares of landscapes and seascapes under improved management; number of countries implementing comprehensive ICZM and Sustainable Consumption and Production approaches, including Coastal Zone Use-Capability mapping; number of persons, reflecting gender balance, trained on integrated approaches, ICZM, MSP, and adaptation to climate variability and change; number of persons, involved in awareness raising activities; number of priority coastal aquifers and related habitats under improved conjunctive surface and groundwater management; number of countries where nation-wide dialogue on conjunctive surface and groundwater management solutions have been initiated; number of national inventories of submarine groundwater discharges (SGD); number of priority coastal areas that develop nexus assessments and endorse a Nexus Strategy/ Action Plan; number of transboundary basins and aquifers in which cooperation is enhanced; number of bankable projects for priority interventions and investments).

Revealing, understanding and implementing the actions needed to achieve sustainable management of the coastal zone and the conjunctive management of surface and groundwater resources are two fundamental aspects of this project. The actions foreseen to raise awareness and capacitate relevant stakeholders will be supported under the MedProgramme KM strategy through specific modalities to be identified and agreed upon at the beginning of the project (surveys, bilateral consultations, face-to-face meetings and virtual exchanges will facilitate the analysis and identification of best ways forward).

At a minimum, the following activities of Child Project 2.1 will be coordinated with, and benefit from, the overall KM strategy:

- MedOpen (online) courses on the implementation of comprehensive ICZM policies and practices developed by the project: the information about these courses will be prominently featured in the MedProgramme platform and promoted in all relevant events and occasions;
- Celebrations for Coast Day (25 September) will be amplified through the MedProgramme channels and included in the overall plan to observe relevant International Days of importance for the Programme with dedicated actions and initiatives; a special consideration will be given to work in synergy with the ICZM Mediterranean Awareness-Raising Strategy (MARS);
- Preparation and implementation of three awareness raising campaigns on Coastal Resilience, Coastal Aquifers and Women in Coastal Management: these will be further supported by the overall strategy and complemented with additional material when/if relevant.
- Organization of National Dialogues to discuss potential conjunctive management solutions (one for each of the five priority aquifers): these events are very relevant at all levels of the KM strategy, in terms of peer-to-peer learning within the MedProgramme portfolio, showcasing cooperation in action at the GEF level, and of knowledge sharing with all relevant audiences and stakeholders about the progress made. The results of these events will be featured and documented through all relevant means implemented by the KM strategy (such as MedProgramme newsletters, National Atlases, Experience Notes, videos, articles, infographics, social media posts, among others).
- Design and delivery of trainings: the MedProgramme KM strategy will give resonance to the results of this series of trainings organized by Child Project 2.1 spanning from modules on conjunctive surface and groundwater management, to modules on ICZM, adaptation to climate change, building coastal resilience, marine spatial planning, and land use

change analysis, and to monitoring technology, protocols, maintenance, sampling protocols and reporting. Appropriate promotion will be done using MedProgramme instruments and channels in close coordination with project managers.

Child Project 2.1 works in close synergy with the SCCF Project as well as Child Project 2.2 under Component 2 of the MedProgramme “Enhancing Sustainability and Climate Resilience in the Coastal Zone”, which has as its purpose to assist countries, coastal zone managers and populations to adapt to evolving climatic conditions threatening sustained freshwater supply, and to introduce land use policies and development practices respectful of the intrinsic vulnerabilities, gender equality, natural and cultural functions, freshwater-seawater interactions, and geological processes characterizing the diverse Mediterranean coastal zones. Specific actions to emphasize results at the Component level will be addressed by the MedProgramme KM strategy and those responsible for Child Projects 2.1 and 2.2 and the SCCF Project will be requested to contribute and provide inputs to this end.

[1] More info at www.iwlearn.net

B. Description of the consistency of the project with:

B.1. Consistency with National Priorities

Describe the consistency of the project with nation strategies and plans or reports and assessments under relevant conventions such as NAPAs, NAPs, ASGM NAPs, MIAs, NBSAPs, NCs, TNAs, NCSAs, NIPs, PRSPs, NPFE, BURs, INDCs, etc.

The project will adhere to the priorities set forth by the countries in their national strategies and action plans for the implementation of the provisions of the Barcelona Convention and ICZM Protocol, will implement SAP-MED and NAPs priority actions, and address issues of transboundary concern identified by the TDA and agreed upon by the countries. A synopsis of the priorities and gaps related to coastal zone management and coastal aquifers of each project country is provided in section 2b: Baseline Scenario in Project Countries.

C. Describe The Budgeted M & E Plan:

Project execution performance will be monitored through the following standard GEF M&E activities. The associated M&E budget and work plan is provided in Annex G-M&E Budget and Work Plan.

Project start:

A Project Inception Workshop will be held within the first 8 months of project start, with participation of those with assigned roles in the project organization structure. The Inception Workshop is crucial to building ownership for the project results and to plan the annual work plans for the first 2 project years. It is anticipated that the Inception Workshop will also be the de facto first meeting of the Project Steering Committee.

The Inception Workshop will address a number of key issues including:

1. Assisting all partners to fully understand and take ownership of the project. Detail the roles, support services and complementary responsibilities of UN Environment, MAP and MedPCU staff vis à vis the project team. Discuss the roles, functions, and responsibilities within the project's decision-making structures, including reporting and communication lines, and conflict resolution mechanisms.
2. Based on the Project Results Framework and the International Waters GEF Tracking Tool, the Annual Work Plans for the first two years will be finalized. Indicators, targets and their means of verification will be reviewed, revised (as needed) and agreed, and assumptions and risks will be re-checked.
3. A detailed overview of reporting, monitoring and evaluation (M&E) requirements will be provided. The Monitoring and Evaluation work plan budget will be agreed and scheduled.
4. Financial reporting procedures and obligations will be discussed.

Project governance meetings will be planned and scheduled, and the overall project governance mechanisms will be reviewed and further fine-tuned, giving particular attention to cost-efficiency, enhanced stakeholder ownership, and the continuity of efforts towards SAP implementation beyond the project life span. Roles and responsibilities of all project organization structures will be clarified, and a meeting/reporting calendar will be elaborated.

Together with the GEF approved Project Document, the Inception Workshop Report will constitute a key reference document for the Project and will be prepared and shared with participants to clarify and formalize various agreements and plans decided during the meeting.

Annually:

1. Annual Project Review/Project Implementation Report (APR/PIR): This key report is prepared to monitor progress made since project start and in particular for the previous reporting period (1 July to 30 June). The APR/PIR combines both UN Environment and GEF reporting requirements.

The APR/PIR includes, but is not limited to, reporting on the following:

- Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative);
- Project outputs delivered per project outcome (annual);
- Lesson learned/good practice;
- Annual Work Programme (AWP) and other expenditure reports;
- Risk and adaptive management; and

· GEF International Waters Tracking Tool indicators.

The text that follows presents the approach to be followed for the Mid Term Evaluation (MTE) and Terminal Evaluation (TE) of Child Project 2.1. In application of the cost efficiency and synergistic principles of the GEF Programmatic Approach, the Child Projects of Component 2 of the Programme will be reviewed/evaluated jointly. This Component is dedicated to ICZM, IWRM, coastal aquifers, Climate Change Adaptation and the Water-Food-Energy and Ecosystem Nexus. For this reason, the Child Project 2.1 will be evaluated together with the Child Project 2.2 and the SCCF Project. Each of the Child Projects will contribute with a specific budget to both the joint MTE and TE. Consequently, a total collective budget of 235,000 USD is allocated for this purpose.

Mid-term of project cycle:

In-line with UN Environment Evaluation Policy and the GEF's Monitoring and Evaluation Policy the project will be subject to a Terminal Evaluation and, additionally, a Mid-Term Review will be commissioned and launched by the Project Manager before the project reaches its mid-point. Based on the conclusion of the Mid-Term Review, the Evaluation Office will determine, whether an independent Mid Term Evaluation (MTE) is required at the mid-point of project implementation. If the decision is to proceed with an independent Mid-Term Evaluation, this will assess the progress made toward the achievement of outcomes and will identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; it will highlight issues requiring decisions and actions, and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the Mid-Term Evaluation will be decided after consultation between the parties. The Terms of Reference for this Mid-Term Evaluation will be prepared by UN Environment

Information in the GEF International Waters Tracking Tool will also be updated during the mid-term evaluation cycle.

End of Project:

The Evaluation Office will be responsible for the Terminal Evaluation (TE) and will liaise with the Task Manager and Executing Agency(ies) throughout the process. The TE will provide an independent assessment of project performance (in terms of relevance, effectiveness and efficiency), and determine the likelihood of impact and sustainability. It will have two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote learning, feedback, and knowledge sharing through results and lessons learned among UN Environment, the GEF, executing partners and other stakeholders. The direct costs of the evaluation will be charged against the project evaluation budget. The Terminal Evaluation will be initiated no earlier than six months prior to the operational completion of project activities and, if a follow-on phase of the project is envisaged, should be completed prior to the submission of the follow-on proposal. Terminal Evaluations must be initiated no later than six months after operational completion.

The draft TE report will be sent by the Evaluation Office to project stakeholders for comment. Formal comments on the report will be shared by the Evaluation Office in an open and transparent manner. The project performance will be assessed against standard evaluation criteria using a six point rating scheme. The final determination of project ratings will be made by the Evaluation Office when the report is finalized and further reviewed by the GEF Independent Evaluation Office upon submission. The evaluation report will be publically disclosed and may be followed by a recommendation compliance process.

PART III: Certification by GEF partner agency(ies)

A. GEF Agency(ies) certification

GEF Agency Coordinator	Date	Project Contact Person	Telephone	Email
Kelly West	10/30/2018	Yegor Volovik	0207626707	yegor.volovik@un.org

ANNEX A: PROJECT RESULTS FRAMEWORK (either copy and paste here the framework from the Agency document, or provide reference to the page in the project document where the framework could be found).

MEDITERRANEAN SEA PROGRAMME: ENHANCING ENVIRONMENTAL SECURITY					
MedProgramme Objective	To accelerate the implementation of agreed upon priority actions to reduce the major transboundary environmental stresses affecting the Mediterranean Sea and its coastal areas while strengthening climate resilience and water security, and improving the health and livelihoods of coastal populations				
MedProgramme Component 2 - Enhancing Sustainability and Climate Resilience in the Coastal Zone					
Child Project 2.1: Mediterranean Coastal Zones Climate Resilience, Water Security and Habitat Protection					
Project Objective	Objective level Indicators	Baseline	End of Project Targets	Means of Verification	Assumptions & Risks
Enhancing Sustainability and Climate Resilience in the Coastal Zone	Number of hectares of landscapes under improved management and climate resilience, taking a source - to - sea approach.	Most countries lack adoption and /or implementation of comprehensive ICZM strategies, plans and practices, and of consideration of the role of coastal aquifers in sustaining livelihoods and biodiversity and buffer the impacts of CV&C.	At least 12,500,000 hectares of landscapes under improved management.	Four () Comprehensive ICZM strategies /plans and five (5) Coastal aquifer management plans adopted or in the process of adoption.	Sustained political support from countries throughout the project
Component 1: Coastal Zone Management					
Outcome 1 (MedProgramme Outcome 4)	Outcome Indicators	Baseline	Targets and Monitoring Milestones	Means of Verification	Assumptions

Coastal zone sustainability in beneficiary countries enhanced through the expanded compliance with the ICZM Protocol and the adoption of national ICZM strategies, coastal plans and instruments, and improved gender equality.	1.1 Number of additional countries where the ICZM Protocol ratification process is under way or completed or implementation advanced.	ICZM protocol (not yet ratified by four (4) out of eight (8) project countries)	ICZM Protocol ratification process under way in three (3) additional countries and advancement in implementation documented in three (3) additional countries with methodologies to support Protocol implementation enhanced.	Documentation related to the ratification and implementation process.	Countries willing to engage in the ratification process of the ICZM Protocol, and to take action on the ground to improve coastal resources management.
	1.2 Number of countries implementing comprehensive ICZM including Coastal Zone Use-Capability mapping.	Coastal Strategies/plans tested in two (2) countries (MedPartnership) Integrative Methodological Framework for coastal zone, river basin and aquifer management (IMF) tested under the MedPartnership.	At least four (4) countries implementing ICZM strategies, plans and approaches.	ICZM Strategy/plan related published documents, and meeting reports	Relevant authorities, and key stakeholders actively participate in the development and implementation of ICZM strategies and plans.
	1.3 Number of persons, reflecting gender balance, trained on integrated approaches, ICZM, MSP, and adaptation to climate variability and change.	Three (3) regional trainings delivered in the framework of MedPartnership and ClimVar & ICZM projects	At least 300 persons trained, reflecting gender, on ICZM, MSP and CVC adaptation.	Training materials Training reports Training feedback List of participants	Persons receiving training represent major stakeholders, relevant national government bodies, and local administrators

	1.4 Number of persons, involved in awareness raising activities.	ICZM awareness raising and marketing strategy prepared	At least 1,000 persons involved in awareness raising activities on coastal resilience and sustainability.	Local and national media report on MedProgramme and ICZM	Participants represent a broad spectrum of stakeholders and public opinion makers.
<u>Component 2: Management of Coastal Aquifers and Related Ecosystems</u>					
Outcome 2 (Program Outcome 5)	Outcome indicator	Baseline	Targets	Means of verification	Assumptions
Increased resilience to climatic variability and change, and enhanced water security of coastal populations through improved sustainability of services provided by coastal aquifers and by groundwater-related coastal habitats.	2.1 Number of priority coastal aquifers and related habitats under improved conjunctive surface and groundwater management.	An inventory and preliminary assessment of all major coastal aquifers and related ecosystems already exists (MedPartnership). No aquifer specific management framework is in place in any of the littoral countries.	At least five (5) priority coastal aquifers and related ecosystems under improved conjunctive surface and groundwater management.	Aquifer management plans submitted for adoption at local/national level	A: Countries and coastal zone administrators committed to the implementation of the Plan
	2.2 Number of countries where nation-wide dialogue onconjunctive surface and groundwater management solutions have been initiated.	Conjunctive surface and groundwater management approaches are new to the beneficiary countries and the region as a whole.	At least three (3) countries have initiate nation-wide dialogues on conjunctive surface and groundwater management solutions.	Dialogue reports	Broad stakeholders' participation ensured
	2.3 Number of national inventories of submarine groundwater discharges (SGD).	None of the project countries have conducted inventories of submarine groundwater discharges.	All nine (9) participating countries complete SGD inventory.	SGDs Inventories reports	National academia support SGD assessment efforts

ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

No specific comments and the activities, outputs and outcome of Child Project 2.1 were made by the STAP or the council at PFD stage. For ease reference the following table reports the comments made by the STAP on the activities, outputs and outcomes of the entire Medprogramme and the feedback provided by the Programme.

Comments of STAP and Council at PFD stage and answers provided by the MedProgramme.

Comment received	Response at CEO Endorsement
PFD Review Sheet	
The majority of comments received in the Review Sheet for the PFD were all addressed at that time and were recorded as ‘Addressed’ in the Review Sheet. Some comments that remained are summarized below:	
Please change the submission in the country section, where it is noted to be a GLOBAL project. The project is regional, with participating countries having included endorsement letters.	Done in the portal submission.
In regard to chemicals and waste, please provide a description of the baseline projects in relation to PCBs and POPs chemicals	Please refer to the National Baseline tables and Baseline sections in the CEO Endorsement Request
A detailed M&E plan should be presented at the time of CEO endorsement.	Please refer to Section C of the CEO Endorsement Request and budget.
STAP Review	
The need for the proposed Programme is understood by STAP to be a demand for a coordinating mechanism for the implementation of actions identified through the MedPartnership project.	The actions that will be addressed in the MedProgramme were defined by the Countries after a long and complex participatory TDA-SAP process leading to the National Action Plans where all the major stakeholders at national level were involved along with the major decision makers and political institutions. The MedPartnership was instrumental in supporting the final phase of this process in order to ensure that the NAPs were developed by the countries in a coordinated and efficient sound manner.
The updating of the TDA proposed in Child Project 1.1 should not be permitted to distract from the implementation of the two agreed SAPs and various NAPs.	It will not, activities which address the SAPs and NAPs will be mainly implemented under CP1.2, 1.3, 2.1, 2.2 and 3.1. The CP 1.1 will work on POP and Hg, moreover it will ensure to put in place all the diagnostic tools that can help us to measure the progress to impact; being the updated TDA one of those.

It is not clear from the PFD that the child projects proposed have been designed in a participatory manner with national and local stakeholders, particularly with civil society representatives and community groups. The PFD still reads as largely a top-down document and proponents need to address this deficit, regarding roles, responsibilities and accountabilities of stakeholders especially at sub-national level.	As stated in the STAP “the Programme followed the successful implementation of the MedPartnership”. The MedProgramme has been developed by request fo the countries and with an approach that considers all the major stakeholders who will be instrumental to the implementation of the proposed activities. For example, for the investment component, both EIB and EBRD, will use the NAPs which has been endorsed at national level with a bottom-up approach involving a wide number of stakeholders at national and local level. The same applies to the conjunctive surface and groundwater management which will be implemented in those countries that recognized its importance through processes which involved (under the MedPartnership) the main stakeholders.
It is not clear from the PFD that the child projects proposed have been designed in a participatory manner with national and local stakeholders, particularly with civil society representatives and community groups. The PFD still reads as largely a top-down document and proponents need to address this deficit, regarding roles, responsibilities and accountabilities of stakeholders especially at sub-national level.	As stated in the STAP “the Programme followed the successful implementation of the MedPartnership”. The MedProgramme has been developed by request of the countries and with an approach that considers all the major stakeholders who will be instrumental to the implementation of the proposed activities. For example, for the investment component, both EIB and EBRD, will use the NAPs which has been endorsed at national level with a bottom-up approach involving a wide number of stakeholders at national and local level. The same applies to the conjunctive surface and groundwater management which will be implemented in those countries that recognized its importance through processes which involved (under the MedPartnership) the main stakeholders.
Therefore, the entire Programme design should provide for sufficient flexibility and appropriate adaptive management strategies to counteract political instability and continuously changing circumstances of the countries in the Mediterranean region	The adaptive management strategy at the MedProgramme level relies on one major tool, the Annual Stocktaking Meetings, part of CP 4.1 (output 2.2). Through these major meetings all issues of concern related to changes in political will or instability in the recipient countries will become manifest and allow for timely adaptive management responses at both the Child Project and at the Program levels.
During the further preparation of the Programme and its individual projects, STAP strongly recommends using a common analytical approach using scenarios to explore possible futures and identify specific intervention points for most impactful programme/project interventions.	Done. In the selection of the many hot spots addressed by MedProgramme, a homogeneous approach has been adopted including future scenarios, whenever necessary.
Ecosystem-based adaptation solutions could be explored.	Done. Nature based solutions, and circular economy approaches inform a number of CPs, in Particular CP 1.2 and 2.1.
Recognizing the current regional security context, STAP recommends developing further cooperative and transboundary infrastructure to protect human security of refugees and migrants by e.g., supporting livelihoods diversification among human traffickers.	The implementing and executing partners of the MedProgramme fully recognize such much needed actions, however based on discussion with the GEF Secretariat during the development phase such kind of actions do not seem to be under GEF mandate. Nevertheless, we believe that by increasing environmental security, the MedProgramme will indirectly strive improve the conditions of migrants, and regional stability.

Many of the Programme interventions are best described in the framework of the Source to Sea concept. Programme proponents are advised to consult the recently released Source to Sea conceptual framework to consolidate and design further often loosely connected activities of the Programme (available at: http://www.thegef.org/council-meeting-documents/conceptual-framework-governing-and-managing-key-flows-source-sea-continuum).	The source to sea conceptual framework, coupled with the GPA guidelines, has clearly inspired the MedProgramme design, which builds on the 40 years' experience, data, information and country ownership produced by the Barcelona Convention.
A priority not dealt with in Component 4 is provision of support to participating countries to incentivize application of IMAP to policy reform or implementation.	The IMAP has been endorsed by the Contracting Parties to the BC in February 2016. All the countries made provision for its implementation at national level. The intention of the MedProgramme is to support and coordinate part of this process at regional level. This will happen especially under CP1.1. Moreover, CP4.1 will implement a KM Strategy which on top of bring benefit to the Programme is also helping the countries to manage the data and information produced by the child project and transfer them, as needed, to the Barcelona Convention IMAP process.
The PFD does not provide substantive evidence of ownership (the word is missing from the entire document), beyond the formal country endorsements, and as is the case with regional projects in general, an emphasis on the demand side needs to be more fully demonstrated, especially for the proposed child projects.	On the contrary, the Programme builds on over 20 years of GEF IW involvement in supporting the TDA-SAP-NAPs process, and on the actions of the Barcelona Convention and of its Regional Activities Centres. This has ensured a level of country ownership rarely achieved in previous efforts globally.
There should also be consideration of potential non industrial sources of POPs and other toxic chemicals, and seeking out of the potential role of Integrated Pest Management (IPM) techniques to minimise use of pesticides in agriculture, horticulture, general pest control, vector control, structural preservation treatments and others.	The Chemicals and Waste component addresses non-industrial use of PFOS by fire fighting services, in line with the priorities expressed by countries in their NIPs. Country NIPs do not prioritize
Where there are data gaps as relates to chemicals pollution, there should be careful retention of such data in the course of implementing this project, as well as key lessons learned in the course of implementation of methods to curtail chemicals pollution from various sources, including the impacts of climate change and variability on the concentration and behaviour of harmful chemicals.	The Child Project 1.1 includes data compilation using a GIS platform on waste inventories and for tracking of disposal progress. It also proposes collection of data on gender aspects of exposure to these waste sites. Finally it will produce lessons learnt on prevention of new POPs and mercury. Through the links with Child Project 4.1 these knowledge products will be retained systematically in the wider KM systems and made available for stakeholders.
GEF Council	

<p>Germany on OUTCOME 1: Reduction of land-based pollution in priority coastal hotspots and measuring progress to impacts. Germany suggests expanding the suggested focus on chemicals pollution (in particular POPS, PAHs, and mercury) to include also non-industrial sources of POPs of high relevance. Furthermore, a more detailed analysis for each country (how effective support and coordination will be reached) is recommended for better monitoring and evaluation purposes.</p>	<p>The reduction of land Bases Sources of pollution (LBS) and measuring of progress to impact in the Mediterranean Sea is based on a 15 years cycle stated with the Transboundary Diagnostic Analysis, followed by the preparation and endorsement by the countries of the Strategic Action Plan (SAP) for LBS (SAP-MED) and for Biodiversity (SAP-BIO). The implementation of the two SAPs led to the definition of national Action Plans where the hotspots of intervention in terms of LBS are clearly indicated and agreed upon by the countries. Unfortunately, this process did not include the tracking, monitoring and identification for POPs, PAHs and Mercury. , Nevertheless, the Child Project 1.1 (GEF ID 9684) of the MedProgramme addresses non-industrial use of PFOS by firefighting services, in line with the priorities expressed by countries in their NIPs. Country NIPs do not prioritize. Moreover, the work done by the Barcelona Convention on defining stocks of POPs and Hg in the Mediterranean countries, together with the further development of this information under the MedProgramme will allow a huge step forward in the region to support the countries in their effort of addressing this issue.</p>
<p>Germany on OUTCOME 4: Germany welcomes the promotion of an integrated coastal zone management (ICZM). Participatory management, thus the empowerment of user groups into the management decisions as well as the surveillance and monitoring is crucial for the projects' success. A stronger emphasis on alternative livelihoods for fishing communities is recommended.</p>	<p>Child Project 2.1 (GEF 9687) focuses on major coastal wetlands, lagoons, humid zones and coastal habitats, providing very valuable services and contributing to coastal livelihoods and biodiversity, are all in part or totally dependent on groundwater regimes. This included livelihoods for fishing communities. Moreover, being the MedProgramme executed under the umbrella of the Barcelona Convention, it will benefit of the ongoing partnership between the Convention and the General Fishery Commission of the Mediterranean which will introduce elements related to fishing in the Programme.</p>
<p>Germany on OUTCOME 7: Germany welcomes the improvement of management capacity as well as the expansion of the Libyan Marine Protected Areas (MPA). It is recommended to incorporate the high importance of artisanal fisheries for local food security and livelihoods. The MPA management plan should imply buffer zones between the MPA and fishing areas. In these small strips local fishermen communities can use an exclusive access (ban for industrial fisheries) and benefit from extensive fisheries. Involvement of fishermen in the management of marine protected areas is crucial for their sustainability.</p>	<p>Artisanal fisheries is included in Child Project 3.1 (GEF ID 10158), concretely in its output 31 where the importance of artisanal fishery is recognized and supported by several activities such as the preparation and dissemination of a set of communication material to promoting artisanal sustainable fishery heritage in and around the selected MPAs.</p>
<p>Germany on the MedProgramme: Lobbying for a higher political prioritization of the implementation of national fishery policies and frameworks promoting sustainable marine resource management.</p>	<p>Although this activity is not directly included in the MedProgramme (which mainly addresses the priorities defined by the Mediterranean Countries under the Protocols of the Barcelona Convention), implementation of national fishery policies and frameworks promoting sustainable marine resource management it is focus of the collaboration partnership between the Convention and the General Fishery Commission of the Mediterranean. Outcomes and outputs of this partnership will be linked to the MedProgramme.</p>

Germany on the MedProgramme: ‘Blue Carbon’ offsets as an economic potential for coastal villages.	Although we recognize the importance of the comment made by Germany, ‘Blue Carbon’ offsets as an economic potential for coastal villages is not in the scope of the MedProgramme. However, being the Programme executed in the wider framework of the Barcelona Convention process linkages with Blue Carbon offset and related matter will be explored and certainly made if appropriate.
Germany on the MedProgramme: Decentralized adaption strategies for the intrusion of saline groundwater into aquifers. In sunny areas PV-driven small-scale desalination plants could allow local approaches.	Although we recognize the importance and tehcnial relevance of the comment made by Germany, desalination plan/processes/standards are not eligible under GEF 6 therefore have been removed by the Programme. Nevertheless, under Child project 1.2 (GEF ID 9717), the Barcelona Convention will develop common environmental standards on desalination for the Mediterranean Region by using NON-GEF funds. These standards will be submitted to the Conference of Contracting Parties of the Convention for consideration. If approved they will be the first step to support the approach suggested by Germany.
Germany on the MedProgramme: The involvement of wastewater reuse and freshwater consumption reduction strategies.	Child Project 1.2 (GEF ID 9717) is promoting investments at national level will focus on WWTP Extension and upgrade including treated wastewater reuse/reinjection (MAR) to decrease water consumption in the countries where national actions will take place (Egypt, Lebanon and Tunisia). Moreover the same Child Project will develop regional standards on wastewater management (including reuse) for deliberation of the Contracting Parties of the Barcelona Convention.
Germany on the MedProgramme: More investments into wastewater-treatment facilities for the reduction of heavy metals, endocrine disrupters, plastic and other pollutants as runoff in the Mediterranean Sea.	Under Child Project 1.2 (GEF ID 9717) EIB will mobile more than USD 600M in investments on WWT facilities in Egypt, Lebanon and Tunisia. Moreover, the MedProgramme is already generating interest of other potential investors to engage in advanced WWTP in the region to achieve reduction of LBS of pollution and increase climate change adaptation resilience.

ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS.

A. Provide detailed funding amount of the PPG activities financing status in the table below:

PPG Grant Approved at PFD: 200,000				
<i>Project Preparation Activities Implemented</i>	<i>GETF/LDCF/SCCF/CBIT Amount (\$)</i>			
	<i>Budgeted Amount</i>	<i>Amount Spent To date</i>	<i>Amount or Committed</i>	<i>Amount planned till the end of the PPG phase</i>

International Consultants - 1 Technical and 1 Project Preparation Experts + 1 Knowledge Managemnet and 1 Gender Specialists.	48,000	43,175	6,500	
Travels to support the preparation of the CP2.1.	22,000	12,588	6,408	3,004
Sub-Contracts with Executing Partners to support the preparation of the CP2.1 Components 1 and 2.	120,000	64,039	55,961	
Organization of national and regional Consultation Meetings.	10,000	1,550		6,360
Contractual Services		415		
Total	200,000	121,767	68,869	9,364

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/CBIT Trust Funds or to your Agency (and/or revolving fund that will be set up)

N/A

ANNEX E: GEF 7 Core Indicator Worksheet

Use this Worksheet to compute those indicator values as required in Part I, Table G to the extent applicable to your proposed project. Progress in programming against these targets for the program will be aggregated and reported at any time during the replenishment period. There is no need to complete this table for climate adaptation projects financed solely through LDCF and SCCF.

Core Indicator 1	Terrestrial protected areas created or under improved management for conservation and sustainable use				(Hectares)
		Hectares (1.1+1.2)			
		Expected		Achieved	
		PIF stage	Endorsement	MTR	TE
Indicator 1.1	Terrestrial protected areas newly created				
Name of Protected Area	WDPA ID	IUCN category	Hectares		
			Expected	Achieved	

				PIF stage	Endorsement	MTR	TE
			Sum				
Indicator 1.2	Terrestrial protected areas under improved management effectiveness						
Name of Protected Area	WDPA ID	IUCN category	Hectares	METT Score			
				Baseline		Achieved	
					Endorsement	MTR	TE
		Sum					
Core Indicator 2	Marine protected areas created or under improved management for conservation and sustainable use						(Hectares)
			Hectares (2.1+2.2)				
			Expected			Achieved	
			PIF stage	Endorsement		MTR	TE
Indicator 2.1	Marine protected areas newly created						
Name of Protected Area	WDPA ID	IUCN category	Hectares				
			Expected		Achieved		
			PIF stage	Endorsement	MTR	TE	

		Sum					
Indicator 2.2	Marine protected areas under improved management effectiveness						
Name of Protected Area	WDPA ID	IUCN category	Hectares	METT Score (Scale 1-3)			
				Baseline		Achieved	
				PIF stage	Endorsement	MTR	TE
		Sum					
Core Indicator 3	Area of land restored						(Hectares)
			Hectares (3.1+3.2+3.3+3.4)				
			Expected		Achieved		
			PIF stage	Endorsement	MTR	TE	
Indicator 3.1	Area of degraded agricultural land restored						
			Hectares				
			Expected		Achieved		
			PIF stage	Endorsement	MTR	TE	
Indicator 3.2	Area of forest and forest land restored						
			Hectares				
			Expected		Achieved		

			PIF stage	Endorsement	MTR	TE
Indicator 3.3	Area of natural grass and shrublands restored					
			Hectares			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 3.4	Area of wetlands (including estuaries, mangroves) restored					
			Hectares			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Core Indicator 4	Area of landscapes under improved practices (hectares; excluding protected areas)					(Hectares)
		Hectares (4.1+4.2+4.3+4.4)				
		Expected			Expected	
		PIF stage	Endorsement	MTR	TE	
		12,500,000	12,500,000			
Indicator 4.1	Area of landscapes under improved management to benefit biodiversity					
			Hectares			

			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
			12,500,000	12,500,000		
Indicator 4.2	Area of landscapes that meet national or international third-party certification that incorporates biodiversity considerations					
Third party certification(s):			Hectares			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 4.3	Area of landscapes under sustainable land management in production systems					
			Hectares			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 4.4	Area of High Conservation Value Forest (HCVF) loss avoided					
			Hectares			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE

Core Indicator 5	Area of marine habitat under improved practices to benefit biodiversity					(Hectares)
Indicator 5.1	Number of fisheries that meet national or international third-party certification that incorporates biodiversity considerations					
Third party certification(s):			Number			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 5.2	Number of large marine ecosystems (LMEs) with reduced pollution and hypoxial					
			Number			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Core Indicator 6	Greenhouse gas emission mitigated					(Tons)
			Tons (6.1+6.2)			
			Entered		Entered	
			PIF stage	Endorsement	MTR	TE
	Expected CO2e (direct)					
	Expected CO2e (indirect)					
Indicator 6.1	Carbon sequestered or emissions avoided in the AFOLU sector					
			Tons			

			Entered		Entered	
			PIF stage	Endorsement	MTR	TE
		Expected CO2e (direct)				
		Expected CO2e (indirect)				
		Anticipated Year				
Indicator 6.2	Emissions avoided					
			Hectares			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
		Expected CO2e (direct)				
		Expected CO2e (indirect)				
		Anticipated Year				
Indicator 6.3	Energy saved					
			MJ			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 6.4	Increase in installed renewable energy capacity per technology					
		Technology	Capacity (MW)			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE

Core Indicator 7	Number of shared water ecosystems (fresh or marine) under new or improved cooperative management					1
Indicator 7.1	Level of Transboundary Diagnostic Analysis and Strategic Action Program (TDA/SAP) formulation and implementation					
		Shared water ecosystem	Rating (scale 1-4)			
			PIF stage	Endorsement	MTR	TE
		<i>Mediterranean LME</i>		4		
Indicator 7.2	Level of Regional Legal Agreements and Regional Management Institutions to support its implementation					
		Shared water ecosystem	Rating (scale 1-4)			
			PIF stage	Endorsement	MTR	TE
		<i>Mediterranean LME</i>		4		
Indicator 7.3	Level of National/Local reforms and active participation of Inter-Ministerial Committees					
		Shared water ecosystem	Rating (scale 1-4)			
			PIF stage	Endorsement	MTR	TE
				1		
Indicator 7.4	Level of engagement in IWLEARN through participation and delivery of key products					
		Shared water ecosystem	Rating (scale 1-4)			
			Rating		Rating	
			PIF stage	Endorsement	MTR	TE

Core Indicator 8	Globally over-exploited fisheries Moved to more sustainable levels					(Tons)
			Metric Tons			
			PIF stage	Endorsement	MTR	TE
Core Indicator 9	Reduction, disposal/destruction, phase out, elimination and avoidance of chemicals of global concern and their waste in the environment and in processes, materials and products					(Tons)
		Metric Tons (9.1+9.2+9.3)				
		Expected			Achieved	
		PIF stage	PIF stage		MTR	TE
Indicator 9.1	Solid and liquid Persistent Organic Pollutants (POPs) and POPs containing materials and products removed or disposed					
POPs type			Metric Tons			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 9.2	Quantity of mercury reduced					
			Metric Tons			
			Expected		Achieved	

			PIF stage	Endorsement	MTR	TE
Indicator 9.3	Number of countries with legislation and policy implemented to control chemicals and waste					
			Number of Countries			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 9.4	Number of low-chemical/non-chemical systems implemented particularly in food production, manufacturing and cities					
			Number			
		Technology	Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Core Indicator 10	Reduction, avoidance of emissions of POPs to air from point and non-point sources					(Grams)
Indicator 10.1	Number of countries with legislation and policy implemented to control emissions of POPs to air					
			Number of Countries			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Indicator 10.2	Number of emission control technologies/practices implemented					
			Number			
			Expected		Achieved	

			PIF stage	Endorsement	MTR	TE
Indicator 10.3	Number of countries with legislation and policy implemented to control chemicals and waste					
			Number of Countries			
			Expected		Achieved	
			PIF stage	Endorsement	MTR	TE
Core Indicator 11	Number of direct beneficiaries disaggregated by gender as co-benefit of GEF investment					(Number)
					Number Achieved	
					MTR	TE
				Female	2,000	
				Male	2,000	
				Total	4,000	

ANNEX: Project Taxonomy Worksheet

Use this Worksheet to list down the taxonomic information required under Part1 by ticking the most relevant keywords/topics//themes that best describes the project

GEF 7 TAXONOMY

Annex C

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			

	Strengthen institutional capacity and decision-making		
	Demonstrate innovative approaches		
Stakeholders			
	Beneficiaries		
	Local Communities		
	Civil Society		
		Community Based Organization	
		Non-Governmental Organization	
	Type of Engagement		
		Consultation	
		Participation	
	Communications		
		Awareness Raising	
		Public Campaigns	
Capacity, Knowledge and Research			
	Capacity Development		
	Knowledge and Learning		
		Knowledge Management	
		Capacity Development	
	Stakeholder Engagement Plan		
Gender Equality			
	Gender Mainstreaming		
		Sex-disaggregated indicators	
		Gender-sensitive indicators	
	Gender results areas		
		Capacity development	
		Awareness raising	
		Knowledge generation	
Focal Areas/Theme			
	International Waters		
		Coastal	

			Aquifer
		Strategic Action Plan Implementation	
		Large Marine Ecosystems	

Climate Finance (Rio Markers)

Climate Change Adaptation 1



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