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UNEP GEF Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem

Second Steering Committee Meeting of the Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem (MedPartnership)
15-17 March 2011, Damascus, Syria

**DRAFT REPLICATION OVERALL PORTFOLIO ASSESSMENT
AND REPLICATION PLAN**



Strategic Partnership for the Mediterranean Sea LME – Regional Project - 4.3 Replication

Overall Portfolio Assessment and Replication Plan



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ACRONYMS

BOD	Biological Oxygen Demand
COD	Chemical Oxygen Demand
COP	Conference of the Parties
CP	Cleaner Production
ESM	Environmentally Sustainable Management
EU	European Union
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GWP	Global Water Partnership
HDPE	High Density Polyethylene
ICZM	Integrated Coastal Zone Management
IFI	International Financial Institution
IMF	Integrative Methodological Framework
IWRM	Integrated Water Resources Management
LME	Large Marine Ecosystem
MAP	Mediterranean Action Plan
MedPAN	Mediterranean Protected Area Network
	Programme for the Assessment and Control of Pollution in the
MEDPOL	Mediterranean
MPA	Marine Protected Area
N	Nitrogen
NAP	National Action Plan
NIP	National Implementation Plan
NOAA	National Oceanographic and Atmospheric Organization
P	Phosphorous
PAP RAC	Priority Actions Program Regional Activity Center
PCB	Polychlorinated byphenil
PD	Project Document
PIF	Project Identification Form
POPs	Persistent Organic Pollutants
PPG	Project Preparation Grant
PRP	Priority Replicable Practice
PTS	Persistent Toxic Substance
RP	Replicable Practice
SAP	Strategic Action Program

SC	Steering Committee
SPA RAC	Specially Protected Areas Regional Action Center
TDA	Transboundary Diagnostic Analysis
TEST	Transfer of Environmentally Sound Technologies
UNEP	United Nations Environment Programme
UNESCO	United Nations Education Science and Cultural Organization
UNIDO	United Nations Industrial Development Organization
WWF	World Wide Fund for Nature
WWT	Waste Water Treatment
WWTP	Waste Water Treatment Plant

1. INTRODUCTION

Within the context of development assistance, the term “replication¹” is generally used to indicate the process through which “practices²” that have been proven cost-effective and sustainable in achieving a desired beneficial impact, are adopted, implemented or up-scaled in contexts similar to the one where the demonstration of effectiveness has occurred. It is hence evident that success in catalyzing replication is critical particularly when addressing environmental stewardship and sustainable development.

The Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem³ - MedPartnership - is the first large scale GEF IW co-funded initiative that includes a particular focus on catalyzing replication. This innovative thrust of the Partnership on promoting throughout the Mediterranean Basin region the replication of “stress reduction”⁴ practices whose effectiveness and sustainability will be demonstrated during the course of the implementation of the Partnership itself, has required a methodological effort in order to define the conceptual framework, the expected outcome, the type and sequence of activities and the execution arrangements that together form the Replication Strategy of the MedPartnership.

The purpose of the activities to be developed under Sub Component 4.3 (Replication) will be to promote and enhance the replication, not of “projects” as loosely stated in the Project Document, but of the **stress reduction practices**(technologies, infrastructure, behaviors, approaches, policies, laws, organizational setups, capacity building) being demonstrated and successfully tested by the investment sub-projects (Investment Fund – Sustainable MED) or through the pilots and other activities of the Regional Project. These practices will be referred to in this report as Replicable Practices – RPs.

“Replicable practices” in the particular context of the MedPartnership will essentially refer to those:

- (i) addressing the priorities under the TDA, SAP MED, SAP Bio and NAPs,

¹The term is used in statistics and science in general, to indicate the repetition of a test or complete experiment.

²i.e.: new approaches, technologies, behaviors, policies, methods etc.

³The MedPartnership (both UNEP/MAP led regional and WB led investment components inclusive) has been designed in accordance with priorities agreed by the countries in the SAP MED and SAP BIO and to prepare the ground for the future implementation of the ICZM Protocol. The activities making up the MedPartnership have been identified in line with the strategic frameworks (TDA, SAPs, NAPs); they have a clear regional endorsement under the umbrella of the Barcelona Convention and thereby fulfill the baseline requirements for screening of priority activities for de-pollution of the marine and coastal zone.

⁴To enhance the sustainability of Mediterranean Basin ecosystems, the focus of the Replication Activities will be on promoting stress reduction.

- (ii) proven as good/innovative practice in achieving cost-efficient and sustainable stress reduction to the marine and coastal zone environments.

This will apply to the large variety of activities (to include an investment, a demonstration, a set of complementary activities, one activity or training, an application of technology...) independently from their size in terms of financial requirements and geographical scope.



Table 1 summarizes the objective and the expected results of the replication activities of MedPartnership.

Table 1 – Results Framework of sub-component 4.3 Replication

Expected Outcome	Expected Outputs
New and additional funding and political commitment leveraged in Mediterranean countries to address key transboundary concerns through the replication of regionally tested and validated cost-effective practices.	1- During the course of the MedPartnership execution, all project countries engaged in promotion of replication activities. 2- Demonstration Centers for capacity building and dissemination of lessons learnt established in at least 3 countries.

	<p>3- Reports on selected Replicable Practices published and disseminated.</p> <p>4- Final Regional Report on Replication, including scenarios and economic evaluations, published and broadly disseminated.</p> <p>5 – Regional Replication Workshops by category of transboundary concern, convened (minimum 5).</p> <p>6 –Replication Conference convened at the end of MedPartnership.</p>
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The replication promotion effort will involve the existing portfolio of Sustainable MED, and Investment Fund sub-projects (see Table 2) and to all pilots to be implemented as part of the various Components of the Regional Project - Coastal Aquifers, TEST, POPs, MPAs, ICZM and others (Table 3).

Table 2 - List of Projects under the Sustainable MED / Investment Fund

(Amounts are in US\$) Blue background indicates regional projects, not assessed from the replication perspective, and/or projects in early stages of design as of February 2011.

Project Title	GEF Amount	Co-Financing
	IW Project	
Sustainable MED Projects		
1. Tunisia: Northern Tunis Wastewater	8,000,000	52,000,000
2. Egypt: Improvement of Water Resources Management	6,750,000	34,300,000
3. Syria: Coastal and Orontes River Basins Water Resources Management	1,000,000	?
4. Regional: Regional Coordination on Improved Water Resources Management and Capacity Building (TA)	5,644,545	82,000,000
5. Regional: Sustainable MED Governance and Know-MED Center	3,000,000	6,600,000
6. Regional: Technical Support, Planning and Capacity for Waste Water Treatment and Recycling Technology (Jordan, Morocco and Tunisia)	4,545,455	7,300,000
7. Regional: Capacity building to enhance the monitoring of sustainable development in the Mediterranean and implementation of actions (UNEP)	2,454,545	3,000,000
8. Libya: Integrated Coastal Zone Management for Conservation and Economic Development	5,000,000	20,000,000
9. Morocco: Integrated Coastal Zone Management – Mediterranean Coast	5,181,818	20,000,000

Investment Fund Projects		
10. Croatia – Bosnia Herzegovina: Neretva and Trebisnjica River Basin Management	8,000,000	21,130,000
11. Croatia: Coastal Cities Pollution Reduction	6,400,000	198,400,000
12. Egypt: Alexandria Coastal Zone Management	7,200,000	647,000,000

Tab. 3 – List of Pilots under the Regional Component

Pilot/Demonstration	Pilot/Demonstration Project Sites	No of Demon.
Component 1: Promotion of integrated approaches for the implementation of the SAPs and NAPs: ICZM, IWRM and management of coastal aquifer.		
Assessment of risk and uncertainty related to the Mediterranean coastal aquifers (UNESCO/IHP Activity 1.1.1.1)	Morocco (Nador Lagoon and Bou Areg aquifer)	1
Coastal aquifer vulnerability mapping (UNESCO/IHP Activity 1.1.1.2)	Croatia (Novljanska Zrnovnica karstic spring and Pula coastal aquifer) Tunisia (Gar El Melah)	3
Coastal Zone Plan: Joint ICZM and IWRM Plan, integrating Groundwater/Aquifers (PAP/RAC Activity 1.2.2.1; GWP-Med Activity 1.3.3.1); UNESCO/IHP Activity 1.1.2.2,	Albania/Montenegro (Buna/Bujana coastal zone)	1
Coastal Zone Plan: ICZM Plan integrating Groundwater/Aquifers (PAP/RAC Activity 1.2.1.1; UNESCO/IHP Activity 1.1.2.2)	Algeria (Reghaia coastal zone)	1
Sustainable Coastal Aquifer and Land Management (UNESCO/IHP Activity 1.1.2.4)	Tunisia (Gabes Oasis)	1
Implementation of eco-hydrogeology applications for management and protection of coastal wetlands (UNESCO/IHP Activity 1.1.2.5)	Morocco (Martil river coastal wetland)	1
Preparation of National ICZM Strategies and NAPs (PAP/RAC Activity 1.21.2)	- Albania - Algeria	2
Advancing IWRM planning at the river basin level in the East Mediterranean (GWP-Med Activity 1.3.3.2, tbc)	Lebanon and Syria: Orontes/Assi River (tbc)	1
Component 2: Pollution from land based activities, including Persistent Organic Pollutants: implementation of SAP MED and related NAPs		
Sub-Component: 2.1. Facilitation of policy and legislative reforms for SAP MED		
2.1.1. Pilot project on the management of phosphogypsum wastes from phosphate fertilizer production	Tunisia	1

Pilot/Demonstration	Pilot/Demonstration Project Sites	No of Demon.
2.1.2. Pilot project on chromium, nutrients and BOD control in tanneries	Turkey	1
2.1.3. Pilot project on recycling and regeneration of used lubricating oils	Algeria	1
2.1.4. Pilot project on recycling of lead batteries	Syria	1
Sub-Component 2.2. Transfer of Environmentally Sound Technology	Tunisia (Tunis, Sfax, Sousse)	43 ⁵ (7 sectors)
	Morocco (Tangier, Tetouan)	
	Egypt (Alexandria, El Mex Bay, Abou Quir)	
Sub-Component 2.3. Environmentally Sound Management of equipment, stocks and wastes containing or contaminated by PCBs in national electricity companies of Mediterranean countries		
Demonstration projects to improve the management programme of PCBs and facilitate the implementation of NIPs and MED-SAP	Albania, Egypt, Libya and Syria	4
Component 3. Conservation of biological diversity: Implementation of SAP BIO and related NAPs		
Sub-component 3.1: Conservation of Coastal and Marine Diversity through the Development of a Mediterranean Marine Protected Areas (MPA) Network		
3.1.2 Identification and planning new MPAs to extend the regional network and enhance its ecological representativeness in Albania, Croatia, Montenegro and Tunisia	-+ Karaburuni MPA in Albania	4
	- Vis Island in Croatia	
	- Island katici, Kotor bay Montenegro Kuriat Islands in Tunisia	
3.1.2.7: Demonstration Project - Libya: The environmental case for a national network of MPAs in Libya (SPA/RAC and WWF-MedPO)	Libya (Ain Ghazela Gulf)	1
3.1.3. Improved management of marine protected areas:		
3.1.3.5 Demonstration Project Turkey (WWF-MedPO)	Turkey (Kas-Kekova SPA)	1
3.1.3.6 Demonstration Project Algeria (WWF-MedPO)	Algeria (Taza National Park)	1
3.1.3.7 Demonstration Project - Croatia: Management and M&E plans for the existing MPAs (WWF-MedPO)	Croatia (Lastovo, Mijiet, Telascica, Brijuni, Kornati MPAs)	1
3.1.4 Ensuring financial Sustainability of regional and national MPA networks		
3.1.4.2: Demonstration Project - Tunisia: Establishment of the management unit of the Cap Nègro-Cap Serrat MPA, development of its Business Plan and identification of sustainable financial mechanism for MPAs (WWF-MedPO)	Tunisia (Cap Nègro – Cap Serrat MPA)	1
3.1.4.3: Demonstration Project on financial sustainability mechanisms for at least three new MPAs in different areas (RAC/SPA)	Montenegro, Croatia, Albania and Tunisia	4
Sub-component 3.2: Promote the sustainable use of fisheries resources through the application of ecosystem-based management approaches		
3.2.2.2 Develop and demonstrate solutions to bycatch mitigation for protected / endangered species of fish and invertebrates and/or for iconic vertebrate species	Tunisia	1

⁵ A total of 43 industries are being selected (vs. 12 originally foreseen in the Project Document) as demonstration sites for identification and implementation of resource efficiency, cleaner production and pollution reduction in Morocco, Tunisia and Egypt. The 43 demonstration sites belong to following 7 industrial sectors: food & beverage, textile, leather, chemical, ceramic, pulp & paper, mechanical-metal processing.

Pilot/Demonstration	Pilot/Demonstration Project Sites	No of Demon.
3.2.3: Supporting fisher's participation in monitoring and management of coastal MPA's	Morocco and Tunisia	1
Sub-component 3.2: Promote the sustainable use of fisheries resources through the application of ecosystem-based management approaches		
3.2.2.2 Develop and demonstrate solutions to bycatch mitigation for protected / endangered species of fish and invertebrates and/or for iconic vertebrate species	Tunisia	1
3.2.3: Supporting fisher's participation in monitoring and management of coastal MPA's	Morocco or Tunisia	2
TOTAL OF PILOT/DEMONSTRATION PROJECTS		49

This report will present a review of the replicable practices which have been so far identified in the portfolio of investment projects and pilot demonstrations that are part of MedPartnership. Given the early stages of implementation of MedPartnership, the review will often be based on a desk study of projects documents. The replication activities will be organized by **categories of transboundary concerns**, and take into consideration all those RPs of the MedPartnership addressing the threats to the Mediterranean LME identified by the TDA, and included in the SAPs (see Table 4). All information on the portfolio of investment projects and regional activities available at this initial stage of MedPartnership (PIFs, PPGs, PDs, activity advancements reports, interviews with task leaders) will be screened with the following purposes:

A - Narrowing down on stress reduction: the focus of replication efforts will be on activities aimed at achieving stress reduction with respect to priority issues as identified in the TDA, SAPs, and NAPs, through different tools, from assessments, legislation/policy reforms, investments, pilot demonstrations.

B - To the extent possible at this early stage, providing an overall assessment of the portfolio of investment sub-projects and pilots from the point of view of replication. This will be done by stress reduction category, pointing out to the extent possible for each Replicable Practice coverage, strengths (e.g.: high regional replication potential) and gaps, adherence to the Partnership founding criteria and principles, and consistency with:

- TDA findings,
- SAP commitments,
- National Action Plans of each Mediterranean country,
- GEF IW strategic priorities.

C – Providing an initial identification of those among RPs that could represent *priority replicable practices* (PRP) around which replication activities will primarily revolve. As

examples, one may mention the various WWT technologies novel for the region to be tested as part of the Coastal Cities Project in Croatia, or the precision irrigation practices aimed at reducing groundwater salinization to be experimented in the Neretva delta area by the Neretva - Trebisnjica Basin Management project, the transfer of environmentally sound technology in industries (UNIDO), etc.⁶

It has to be stressed that the selection of PRPs will not be a purely scientific exercise, but will contain elements of subjectivity and will take into consideration opportunities for investments, synergies with other programs and/or political processes, likelihood of replication actually occurring, etc.⁷

In addition to the results of the portfolio screening process, the Report also contains general conclusions and recommendations on the activities planned to promote replication – those that are feasible within the financial envelop, and more cost-effective – and a general plan for the implementation of these activities.

Once the Report will have been amended and approved by the Steering Committee, it will be possible to proceed to the detailed design of the “replication promotion activities”, on an yearly basis. These activities will have four pillars: *Awareness Raising, Capacity Building, Stakeholder Involvement, and ICT*. They will make full use of a menu of communication tools, such as media events, workshops, audio-visuals, etc., and include the establishment of Demo Centers at the sites of most successful demonstrations (investments/pilots).

2. PORTFOLIO ASSESSMENT

Given the focus of the replication sub-component on catalyzing action on measures to reduce the stresses that are presently threatening the long term environmental sustainability of the Mediterranean ecosystem, the Assessment closely relates to the findings of the TDA, and will review the activities under MedPartnership according to the categories of impacts that these stresses are having on the marine and coastal environments (Tab. 4).

Tab. 4 - MedPartnership interventions by categories of transboundary concerns

Transboundary Concerns - TDA	Means of Mitigation	Partner
Land Based Pollution – Point Sources - Excess Nutrient and Toxic Discharges	Reduction of Nutrient Discharges from Urban Wastewaters	World Bank (Sustaibale MED and IF investments) MEDPOL, UNIDO TEST (Transfer

⁶Identification of PRPs will be reviewed on an yearly basis, and approved by the Steering Committee together with the Annual Replication (and Communication) Workplan.

⁷ The Project Document mentions possible the adoption of a more objective “replication scoring system” based on indicators to be identified. The feasibility of this interesting and innovative approach might be assessed at a pilot scale.

	Reduction of Industrial Effluents and Emissions and Toxic Discharges Disposal of POPs	of Environmentally Sound Technologies) MEDPOL
Land Based Pollution – Non Point Sources	Reduction of Nutrients Discharges and Erosion Control through IWRM	World Bank (IF sub-project) GWP MED
Anthropogenic Pressures on Coastal Zones	ICZM, Coastal Aquifers Protection and Sustainable Use	UNESCO IHP, PAP RAC, World Bank (Sustainable MED, IF)
Conversion of Critical Habitats; overexploitation of Marine Living Resources; Alien Species Introduction	Strengthening of MPAs Management, Creation of New MPAs, ICZM	WWF MedPO, SPA RAC, PAP RAC
Overfishing; Use of non-selective fishing gear	Introduction of Ecosystem Based Fisheries Management	FAO

2.1 Land Based Pollution: Point Sources

Decline in seawater quality in the Mediterranean is often a localized phenomenon. Mediterranean coasts are dotted by pollution hot spots, usually located in semi-enclosed bays close to big cities, harbors and industrial areas. Eutrophication affecting the ecological balance of the marine food web and resulting in animal kills is mainly a coastal problem while the open sea remains relatively healthy. The introduction of untreated urban and industrial wastes with high levels of persistent toxic chemicals, nutrients as well as pathogenic micro-organisms (Nitrogen and phosphorus compounds, heavy metals - mercury, cadmium, arsenic, copper / zinc, lead - persistent pesticides, polychlorinated biphenyls (PCBs) and oil-related polycyclic aromatic hydrocarbons) into the Mediterranean is however a major source of national, regional and international concern. The resulting decline in seawater quality is manifested as increasing incidences of eutrophication accompanied with reduced transparency and frequent algal blooms, high concentrations of heavy metals and persistent toxic substances (PTS) in the seawaters as well as high microbiological contaminant loads. Lack of sewage infrastructure is still a major problem.

2.1.1 Industrial Discharges

The demonstration activities foreseen as part of MedPartnership in the sector of industrial discharges reduction include three lines of action: addressing major sources identified in the TDA (MEDPOL); disposal of PCB stockpiles (MEDPOL); transfer of environmentally sound technologies to small medium sized industries (UNIDO).

Title of Project/Pilot	Country/Site	Partner	Status
Environmentally sound management (ESM) of lub oil: facilitation of policy and legislative reforms	Algeria	MEDPOL	Early implementation
ESM of lead batteries: facilitation of policy and legislative reforms	Syria	MEDPOL	Early Implementation
ESM of tanneries sector: facilitation of policy and legislative reforms	Turkey	MEDPOL	Early Implementation
ESM of phosphogypsum: facilitation of policy and legislative reforms	Tunisia	MEDPOL	Early Implementation
Environmentally sound management of equipment, stocks and wastes containing or contaminated by PCBs in national electricity companies of mediterranean countries	Albania, Egypt, Lebanon, Libya and Syria	MEDPOL	Early Implementation
Transfer on Environmentally Sound Technologies MED TEST	Tunisia, Morocco and Egypt	UNIDO	Nearing Completion

(i) Environmentally Sound Management of LubOil, Lead Batteries, Tanneries, Phosphogypsum

Pilot Project: Environmentally Sound Management (ESM) Of Lub Oil: Facilitation Of Policy And Legislative Reforms - Algeria

Used lubricating oil is reaching the Mediterranean Sea through urban sewers and contains a variety of persistent toxic substances such as PAHs, plasticizers and additives. Few of the participating countries have effective systems for used lubricating oil management and recycling compared with the EU in which 80% of such used oil is collected and 44% of it recycled.

The demo adopts the following practices:

- *Policy and institutional reforms* - to improve the legislative and institutional framework for the recycling of lub oil in Algeria.

- *Capacity building workshops* - to transfer knowledge and expertise from Tunisia and Bosnia-Herzegovina, which are more advanced in terms of lubricating oil recycling, to Algeria and several other countries.
- *Piloting on the ground* - a system of recycling and regeneration of lub oil in Algeria.

Replication Potential: All practices tested in this activity focused on Algeria are in principle replicable in a number of project countries: Albania, Croatia, Egypt, Libya, Morocco, Montenegro and Syria.

Pilot Project: ESM Of Lead Batteries: Facilitation Of Policy And Legislative Reforms - Syria

One of the major sources of lead in the Mediterranean is the inappropriate disposal of lead automotive batteries. Lead from battery smelters reaches the Mediterranean Sea through liquid releases and atmospheric transport and deposition. The smelter industry in most of the GEF eligible countries is still practiced at the artisanal level leading to high emissions of lead.

The demo adopts the following practices:

- *Legislative and Institutional Reforms* - Actions will be implemented to draft legislation and institutional reforms for the recycling of lead Batteries in Syria.
- *Piloting Recycling on the ground* – the demo will prepare and implement a a system of recycling of lead batteries in Syria.
- *Capacity building and knowledge exchange* - through a number of workshops in which also Albania, Algeria, Croatia, Egypt, Libya, Morocco, Montenegro, Tunisia and Turkey will participate to transfer the gained know-how and the expertise.

Replication Potential: The demo approach would be replicable in all project countries.

Pilot Project: ESM Of Tanneries Sector: Facilitation Of Policy And Legislative Reforms - Turkey

Leather tanning is a widespread industrial activity in the Mediterranean region that is frequently practiced by small industrial units. Tannery effluents have high organic matter content and are considered a major source of chromium (Cr), BOD and nutrients. Albania, Algeria, Egypt, Lebanon and Turkey have already included actions on tanneries in their respective NAPs but similar problems exist in other countries of the region.

The demo adopts the following practices:

- *Legal and institutional reforms* - and technical management mechanisms to control the effluent quality from tanneries. Actions will include the drafting and issuing of legislative and institutional reforms for the control of Cr, BOD and nutrients.
- *Implementation of management measures* - at approximately 65 tanneries in the region of Buyuk Menderes in Turkey.
- *Preparation and implementation of guidelines* - to control similar releases from tanneries in Albania, Algeria, Lebanon and Turkey.

Replication Potential: The demo approach would be replicable in all project countries

Pilot Project: ESM Of Phosphogypsum: Facilitation Of Policy And Legislative Reforms - Tunisia

Phosphogypsum produced by the phosphate fertilizer production process has been assigned a high priority in the region. Phosphogypsum is a by-product of the phosphate fertilizer industry that is dumped into the sea or/and deposited in slagpiles on coastal lands. When such wastes enter the marine environment, the phosphogypsum deposits alter the sediment structure in the vicinity leading to serious degradation of the benthic ecosystem. Because phosphogypsum can contain high concentrations of the toxic metals cadmium (Cd), mercury (Hg) and lead (Pb) the material may have an impact on marine biota. The issue is considered a priority in Lebanon and Tunisia and relevant actions are included in their respective NAPs. Dumping of phosphogypsum in the coastal zone is responsible for the input of more than 1,300 tonnes/year of mercury, cadmium and lead.

The demo adopts the following practices:

- *Legislative and institutional reforms* - Actions will include the drafting and issuing of institutional, legislative reforms and an environmentally sound management scheme for the disposal of phosphogypsum slurry in Lebanon in collaboration with phosphate fertilizer companies and relevant national authorities in Lebanon, Tunisia and Syria.
- *Piloting on the ground* - a system of management and recycling of phosphogypsum slurry management in Tunisia
- *Transfer of know-how* - and expertise to several Mediterranean Countries

Replication Potential: The demo approach would be replicable in Lebanon, Syria and Tunisia.

(ii) Environmentally Sound Management Of Equipment, Stocks And Wastes Containing Or Contaminated By Pcb's In National Electricity Companies Of Mediterranean Countries (MEDPOL)

All Mediterranean countries have identified PCB equipment that continues in service; stockpiles of PCBs-containing electrical equipment; and quantities of discarded equipment and quantities of oil that consist of, or are contaminated by PCBs as one of the priority issues of environmental concerns in the region. In addition, the results of the monitoring programmes in the Mediterranean show that PCBs continue to be bioaccumulated in the food web of the marine ecosystem of the Mediterranean. Finally in the NIPs, national electric companies are identified as the principal holders of this equipment, stocks and wastes and so represent the initial focus for work to eliminate PCBs. Activities seek to build on priorities established in the National Action Plans (NAPs), the Stockholm Convention National Implementation Plans (NIPs), and on existing initiatives in some Mediterranean states, to provide a first, harmonized initiative on PCBs that meets the obligations of the Stockholm and Barcelona Conventions and is compatible with the requirements under the Basel Convention to which all the Mediterranean states are Party. The demo aims to introduce environmentally sound management (ESM) to all stages of the 'life-cycle' of electrical equipment containing or contaminated by PCBs.

The activity will be implemented in Albania, Egypt, Lebanon, Libya and Syria.

The demo adopts the following practices:

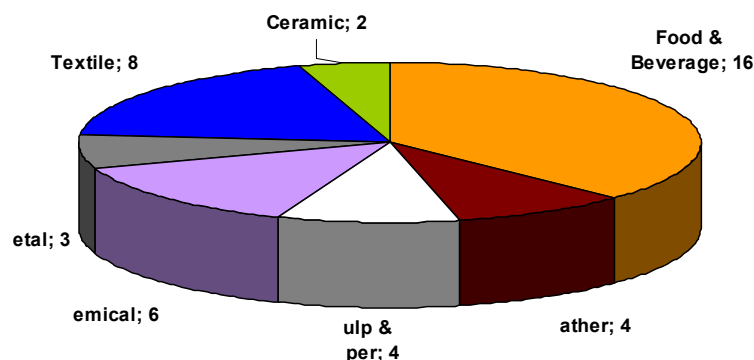
- *Revisions to the legislative and institutional framework* - to meet national, regional and international requirements. Wherever possible arrangements will be harmonized on a regional basis to strengthen cooperation and joint working.
- *Strengthening of coordination* - between public regulatory authorities and entities holding or handling equipment containing or contaminated with PCBs in order to secure PCBs and prevent their environmental release.
- *Piloting on the ground* - improvement of the maintenance, servicing and storage operations in the participating countries, through the review of available facilities; phase-out of equipment containing or contaminated by PCBs; phase-out plans for equipment containing, or contaminated with, PCBs.

- *Awareness raising* - of the importance of ESM of PCBs equipment, in the public and private sectors through the development of communications strategies and materials and the promotion of awareness and involvement in phase-out and disposal of PCBs equipment amongst the public and private sector actors.
- *Technical training and capacity building* - in the environmentally sound management of PCBs for those directly engaged in the management of electrical equipment that might contain or be contaminated with PCBs.

Replication Potential: the practices adopted in the demo would be replicable in the other MedPartnership countries.

(iii) Transfer on Environmentally Sound Technologies – MED TEST (UNIDO)

MED TEST consist of several capacity building and awareness raising activities as well as pilot industrial projects to demonstrate clean technology transfer and resource efficiency within industry sectors. There are 43 industry demonstration projects, within 7 main industrial sectors as highlighted in below, including: food & beverage, chemical, textile, pulp and paper, metal, leather and ceramic.



s by industry sector

Exempl

- \
- Chemicals management and substitution
- Process integration: heat recovery and cooling demand
- Reduction of material losses
- Waste valorisation
- Wastewater treatment and discharge

Depending on the specific industrial sector, implementation of best practices will be leading to stress reduction objectives and targets, which are all relevant for reducing

pollution of the Mediterranean basin within industrial hot spots. For instance in the food and beverage sector best practices will aim at reductions of BOD/COD pollutions loads into wastewater, in tannery sector reductions will target specifically Chromium/Sulphur/Nitrogen discharges, in Chemical/petrochemical sector will target TDS and hydrocarbons, in Metal sector will target heavy metals, etc..

The table below, illustrate some preliminary results for 6 food & beverage companies in Tunisia.

Industry	Subsector	N. of identified CP best practices	Water Saving (m3/yr)	Reduction of Water consumption [%]	BOD5 savings (kg/yr)	Reduction of BOD5 [%]
Tunisie Lait	Dairy	10	315,963	58%	256,089	N.A.
CLC-Delice	Dairy	11	180,745	55%	144,732	22,7%
SBC	Soft drinks	12	27,834	34%	39,815	31%
SNB	Soft drinks	17	26,197	22%	59,609	35%
SCAPCB	Tomate	13	287,696	66%	TBD	TBD
GIAS	Margarine	10	14,135	42%	114,326	35%

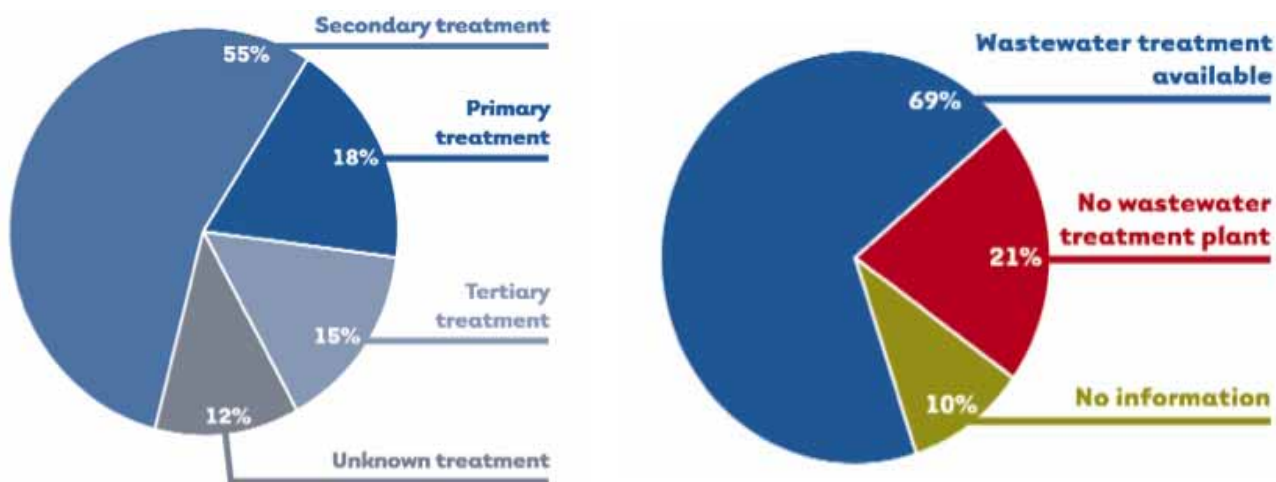
Replication Potential: Each of the 43 demonstration projects aims at identifying best practices (combination of technology and managerial solutions), which can enhance productivity and environmental performance of industry. These best practices are specific to the Mediterranean regional context in which industry is operating, are highly replicable within industrial sector, and in some cases can also be replicated across other sectors. By the end of the project there will be a set of best practices that would be very valuable to disseminate for enabling scaling up and market uptake of cleaner production services within the 3 project's countries as well as in the Mediterranean Region.

2.1.2 Urban Waste Waters Discharges

Wastewater discharge into the sea is the most common manner of final wastewater disposal in Mediterranean coastal urban and industrial zones. Lack of treatment even on a basic scale is therefore the biggest cause of pollution in terms of BOD5 and nutrients. Currently it is estimated that half of untreated pollution in terms of BOD5 originates from direct discharges. Less than one-third of BOD5 pollution comes from the discharges of treatment plants and the remainder from storm water during periods of rain.

The overall wastewater system efficiency in the Mediterranean is mediocre (42%). Two countries have no wastewater treatment plants (Albania and Syrian Arab Republic), Egypt and Turkey pose an evident problem of an insufficient number of treatment plants (including the key hot spots of the cities of Alexandria and Izmir) and several others eliminate as low as 10% of BOD5 and that at most (Croatia, Lebanon, Morocco, Slovenia).

Point sources provide the easiest opportunity to reduce nutrients, since the wastewater containing nutrients is brought to a single location where it can be managed. It is clear that an effort is required to install treatment plants where they do not exist and to supplement primary treatment systems by secondary and more refined techniques. Where wastewater treatment plants do exist, individual countries' performance varies widely from the average efficiency levels. Countries with primary treatment plants only show the lowest rates of wastewater treatment efficiency.



Figures show the percentage of Mediterranean coastal cities with populations above 10,000 inhabitants with WWTP and types of treatment.

Nutrient reduction using lagoons or constructed wetlands⁸ is a treatment technology particularly feasible for small centers: the technology is not complicated, nor is it expensive to operate.



Engineered wetland built near Lake Manzala in the Nile Delta as a dissemination and capacity building center, part of a GEF project.

MedPartnership includes major investments addressing the treatment and disposal of urban waste waters, along essentially four lines of action:

- Construction of new systems
- Rehabilitation of existing plants
- Testing of non-conventional systems, with focus on nutrient removal⁹
- Disposal of treated wastewaters and TWW reuse

Urban Wastewater Treatment and Disposal in ongoing MedPartnership Investment Projects (World Bank) are shown in the following table. For the analysis of the various projects see Annex 1.

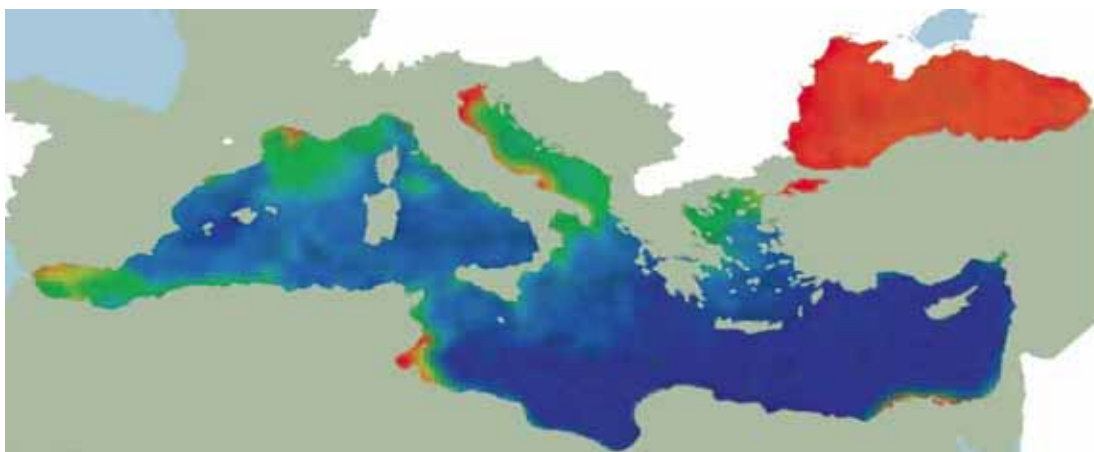
⁸Constructed wetlands (can either be surface flow or subsurface flow), include engineered reed beds and belong to the family of phytoremediation and ecotechnologies; they provide a high degree of biological improvement and depending on design, act as a primary, secondary and sometimes tertiary treatment. They are known to be highly productive systems as they copy natural wetlands, called the "Kidneys of the earth" for their fundamental recycling capacity of the hydrological cycle in the biosphere. Robust and reliable, their treatment capacities improve as time goes by, at the opposite of conventional treatment plants whose machinery ages with time. They are being increasingly used, although adequate and experienced design are more fundamental than for other systems and space limitation may impede their use.

⁹Wastewater may contain high levels of the nutrients nitrogen and phosphorus. Excessive release to the environment can lead to a build up of nutrients, called eutrophication, which can in turn encourage the overgrowth of weeds, algae, and cyanobacteria (blue-green algae). This may cause an algal bloom, a rapid growth in the population of algae. The algae numbers are unsustainable and eventually most of them die. The decomposition of the algae by bacteria uses up so much of oxygen in the water that most or all of the animals die, which creates more organic matter for the bacteria to decompose. In addition to causing deoxygenation, some algal species produce toxins that contaminate drinking water supplies. Different treatment processes are required to remove nitrogen and phosphorus.

Typology of Urban WW Treatment and Disposal	Title of project	Country	Partner	status
Construction of New Systems	Coastal Cities Pollution Control	Croatia	World Bank	Ongoing
Rehabilitation of Existing Plants	Neretva & Trebisnjica River Basin Management	Croatia and BiH	World Bank	Ongoing
Non Conventional Nutrient Removal Systems	Coastal Cities Pollution Control	Croatia	World Bank	Ongoing
	Alexandria Coastal Zone Management	Egypt		Ongoing
Disposal of TWW and Reuse	Northern Tunis Wastewater Project	Tunisia	World bank	Starting

2.2 Land Based Pollution – Non-Point Sources

Non-point source pollution is water pollution affecting a water body from diffuse sources, such as polluted runoff (sediments, nutrients, heavy metals, etc.) from agricultural areas draining into a river, or wind-borne debris blowing out to sea. Polluted runoff from agriculture is the primary cause of nutrient enrichment in the Mediterranean Sea (TDA)¹⁰.



Mean surface chlorophyll concentration (TDA)

MedPartnership addresses the issue of non-point sources at its roots, by demonstrating and promoting - in two cases - the adoption of Integrated Water Resources Management (IWRM) in the basins draining to the Mediterranean:

(1) Advancing IWRM Planning At The River Basin Level In The Eastern Mediterranean – Orontes/Assi River (GWP Med)

¹⁰ Sediment may enter surface waters from eroding stream banks, and from surface runoff due to improper plant cover on urban and rural land. Sediment creates turbidity in water bodies, reducing the amount of light reaching lower depths, which can inhibit growth of submerged aquatic plants and consequently affect species which are dependent on them, such as fish and shellfish. Nutrients mainly refers to organic matter from runoffs, landfill, livestock operation and crop lands, etc. It mainly includes Phosphorus and Nitrogen.

This pilot project would address the highly sensitive transboundary Orontes Basin (Lebanon/Syria) case. Activities are presently on stand-by waiting for agreement by the countries, which is expected within the first half of 2011.

(2) Neretva And Trebisnjica River Basin Management Project (World Bank)

For the replication potential of the IWRM approach adopted by this large project see the project analysis in Annex 1.

Title of IWRM project/pilot	Country	Partner	Status
Neretva and Trebisnjica river basin management project	Croatia, Bosnia and Herzegovina	World Bank Investment Fund	Under implementation
Advancing IWRM planning at the river basin level in the Eastern Mediterranean – Orontes/Assi river	Syria, Lebanon	GWP MED	Waiting on decision by countries

2.3 Anthropogenic pressures on coastal zones¹¹

Some critical coastal habitats along the Mediterranean coasts are severely threatened by a variety of human activities. Major threats include pollution (sewage, oil, nutrients), invasive species, introduced species, land reclamation, river damming and flow modification, bottom trawling, solid waste disposal at sea, uncontrolled tourist presence in ecologically sensitive areas as well as inadequate public and stakeholders awareness, and inadequate or non-existent legislation and available enforcement means. Socio-economic impacts of habitat degradation include loss of high value ecological services; reduction in nearshore fisheries, particularly for artisanal fisheries; loss of tourism and its documented economic benefits; and loss of cultural heritage.

¹¹A recently approved UNEP-MAP GEF project will complement MedPartnership with an assessment of the impacts caused by climatic variability and change.



The Buna-Bojana Coastal Area, shared by Albania and Montenegro

Particularly impacted are *seagrass habitats* that have been affected by eutrophication, bottom trawling, dredging, and other human activities. *Coastal wetlands* are also adversely affected by aquifer mismanagement, thereby threatening the biodiversity dependent on them¹². The drying up of coastal wetlands and coastal development result in the fragmentation of habitats¹³.

MedPartnership has a particular focus on promoting measures to reduce the stresses to the coastal environment caused by human activities. First of all, MedPartnership supports the implementation of existing relevant regional and international soft and legally binding laws and conventions. The promotion of the implementation of the Barcelona Convention LBS

¹²The threats to wetlands from aquifer mismanagement are twofold. First, over-use of aquifers can result in the drying up of wetlands dependent upon them. The seepage from the coastal aquifers, estimated to be 13 billion m³/yr in the UNEP/Blue Plan, accounts for about one quarter of the total freshwater inflow into the Mediterranean. Second, wetlands are degraded by the saline intrusion that occurs when coastal aquifers are over-exploited and from the pollutants introduced into the aquifers. The coastal seepage and submarine discharges are critical to the water balance and seawater quality in the marine subbasins and support wetlands and brackish water habitats with biodiversity and fishery nursery areas in the coastal zones. The karstic aquifers in particular are vulnerable to saline intrusion and surface pollution, especially in the open karst systems exposed to human-induced groundwater pollution.

¹³Once a habitat becomes fragmented as a result of coastal development, ecosystem processes are disrupted. This type of man-induced impact damages biodiversity by inducing inbreeding, which reduces the gene flow and therefore genetic variability.

Protocol and of the ICZM Protocol, soon to enter into force, is a centerpiece of MedPartnership’s Regional Project. An effort will also be made to promote the integration of the Barcelona Convention guidance with a Coastal Aquifers addendum to the ICZM Protocol.

In addition to supporting regional policy initiatives (1), MedPartnership will develop and promote a new integrated methodology for IWRM-ICZM-Coastal Aquifers planning, taking also into consideration Climate Variability and Change (2), will demonstrate ways to sustainably manage coastal aquifers as a means to protect coastal habitats (3), and will address key Mediterranean hot spots and sensitive areas through targeted investments (4).

2.3.1. Development of Policy Instruments for Coastal Zone Management Planning

Pilot/Demonstration - Partner	Pilot/Demonstration Project Country/Sites	No of Demonstrations	Status
Coastal Zone Plan: Joint ICZM and IWRM Plan, integrating Groundwater/Aquifers (PAP/RAC GWP-Med; UNESCO/IHP)	Albania/Montenegro (Buna/Bojana coastal zone)	1	Under implementation
Coastal Zone Plan: ICZM Plan integrating Groundwater/Aquifers (PAP/RAC; UNESCO/IHP)	Algeria (Reghaia coastal zone)	1	Under implementation
Preparation of National ICZM Strategies and NAPs (PAP/RAC)	Albania, Algeria	2	Under implementation

(i) Preparation Of National ICZM Strategies and NAPs (PAP RAC) - Testing New Guidelines

National ICZM Strategies are seen by many as the “core request of the ICZM Protocol”. Article 18-2 of the Protocol sets a clear requirement for the contents of this important strategic document. *“The national strategy, based on an analysis of the existing situation, shall set 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 cost as well as the institutional instruments and legal and financial means available, and set an implementation schedule”.*

MedPartnership is developing guidelines for the elaboration of national coastal strategies. Based on the experience of the existing coastal strategies, as well as of various national environmental strategies, like the latest National Maritime Strategies, the guidelines will be proposed to the countries, and then tested on 2 national ICZM strategies and NAPs

(including investment portfolios) that are to be prepared in Albania and Algeria. The experience from the two countries will provide quality feedback for the guidelines which are to be finalised only upon the presentation of the two national strategies.

National coastal strategies, as stated above, are among the most important endeavours in the implementation of the Mediterranean ICZM Protocol. They are considered to be the adequate task for the Inter-ministerial committees that are to be established within the MedPartnership project in all GEF eligible countries.

Replication Potential: The replication of this experience in other countries, beyond Albania and Algeria, would be of a great support to the ratification and implementation of the Mediterranean ICZM Protocol. One key target country for replication would be Syria, a country that has already expressed its interest. To this end, Syria, with the support of MAP (PAP/RAC) as established an Inter-ministerial Committee. The readiness of Syria to prepare the National ICZM Strategy was confirmed at the MedPartnership Inception meeting in Budva.

(ii) A New Generation Of Coastal Plans (PAP RAC, GWP Med, UNESCO)

MedPartnership is engaged in the promotion of a new generation of coastal plans by developing an *Integrative Methodological Framework (IMF)* for merging methodologies for surface water, groundwater, biodiversity and coastal planning, with the climate variability and change as a cross-cutting issue¹⁴. This will strengthen the coordinated approach in the management of aquifers, water resources and the coastal zone. The new methodology, jointly developed by the PAP/RAC, GWP-Med and the UNESCO-IHP, is being tested in 2 pilot sites, one transboundary coastal area of the **Buna/Bojana Delta**, shared by Albania and Montenegro, and in the **Reghaia** coastal region of Algeria. Feedback from the pilot coastal plans will allow to fine tune this new and innovative methodology.

Replication Potential: The new IMF for ICZM – IWRM – Coastal Aquifers promoted by MedPartnership has a high potential for replication, since this innovative approach could be applied to many Mediterranean coastal areas, and beyond, in all sensitive coastal zones. Moreover, the new EU Strategy for Water in the Mediterranean includes an explicit recommendation for linking ICZM and IWRM methodologies and practices and applying that at national and local levels. Further, the European Commission (EuropeAid) has

¹⁴ Estimation of the economic costs of the climate variability and change is an important input for the coastal plans. In some highly vulnerable areas, such as estuaries or other low-lying coastal zones, it is an essential input for the future planning and management, in particular of the infrastructural investments. Within the GEF project “*Integration of climate variability and change into national strategies to implement ICZM Protocol in the Mediterranean*” the development of such a methodology is foreseen, and PAP/RAC, together with the Blue Plan, is responsible for its development. In addition, the methodology is to be tested on 2 - 5 cases. The results of the pilot cases for testing of the methodology for estimating economic costs of the climate variability and change will secure an optimal input for the preparation of the coastal plans.

already presented interest on this agenda and has agreed to make contribution to the Buna/Bojana case with MED EUWI-related funds.

2.3.2 The Sustainable Management of Coastal Aquifers

Pilot/Demonstration	Demonstration Project Sites	Country	Partner	Status
Assessment of coastal aquifers	Nadoor Lagoon and the Bou Areg coastal aquifer	Morocco	UNESCO	Ongoing
Coastal aquifer vulnerability mapping	Novljanska Zrnovnica karstic spring and Pula coastal aquifers Gar El Melah coastal aquifer	Croatia Tunisia	UNESCO	Ongoing
Sustainable Coastal Aquifer and Land Management	Gabes Oasis	Tunisia	UNESCO	Ongoing
Eco-hydrogeology applications for management and protection of coastal wetlands	Martil river coastal wetland	Morocco	UNESCO	Ongoing

(i) Assessment of Coastal Aquifers: The Nadoor Lagoon And The Bou Areg Coastal Aquifer (Morocco)

Objectives: Quantification of the interactions between groundwater and lagoon water and identification of possible occurrence of submarine groundwater discharge.

Status of implementation: 3 field campaigns were carried out in 2010 including collection of groundwater samples in the Bou Areg Plain and surface water in the Nador Lagoon. The data collected is being analyzed and the results will be presented to the national and local authorities for discussion and appropriation.

Replication Potential: In terms of methodology for characterization of groundwater quality and its relation with surface water bodies, the use of isotopes and geo-chemical analyses, there is a good potential for replication in other countries, where the quality of groundwater potentially contaminated or degraded by surface pollution is still unknown.

(ii) Coastal Aquifer Vulnerability Mapping

Objectives: Preparation of coastal aquifer vulnerability maps for prevention of aquifer pollution risks and degradation of drinking groundwater quality and of the coastal and marine environments.

Status of implementation: 3 field campaigns carried out in Gar El Melah in 2010, database and GIS established for preparation of the vulnerability map. Coordination for initiation of activities in Croatia established and stakeholders involved.

Replication Potential:The activities carried out in Tunisia and Croatia will result in the preparation of vulnerability maps for selected coastal aquifers. These maps will support decision-makers for the land planning and exploitation and protection of the groundwater resources. The methodologies and process used in the preparation of the vulnerability maps, both in karstic systems and other sedimentary systems, could be applied in other coastal aquifers in the region. *This is one of the activities with more replication potential*, as all coastal aquifers exploited in the Mediterranean basin should have a vulnerability map/study prepared.

(iii) Sustainable Coastal Aquifer And Land Management

*Objectives:*Improving groundwater management in the Gabes region considering the socio-economic needs and sustainable protection of the coastal oases ecosystem. Assessment of land degradation in the context of ICZM and control of LBS pollution of coastal and sea waters.

Status of implementation: Data gathered on the resource and information system built (database and GIS) and communication activities initiated.

Replication Potential:An integrated model including socio-economic and land-use parameters as well as groundwater exploitation will be developed in this activity. This model will be a unique example of integration of water/land and socio-economic systems. Once the model is finalized and is proven to be a successful tool for decision-making, it could be applied in other countries in the region. The replication potential is high provided that the example tested here produces sound results that can be exploitable by the local authorities.

(iv) Eco-Hydrogeology Applications For Management And Protection Of Coastal Wetlands

Objectives: Management and protection of sensitive coastal groundwater dependent wetlands and ecosystems through assessment, characterization and management intervention.

Status of implementation: Methodology identified and case study selected for eco-hydrogeology study and management action plan with competent authorities.

Replication Potential: In this activity, a methodology for the characterization of the dependence of surface coastal ecosystems (and wetlands) vis-à-vis groundwater will be developed for a case study in Morocco. A mathematical model showing the relationships between the surface water/groundwater and sea will be prepared. This example could be also replicated in other groundwater dependent ecosystems in the Mediterranean basin. Some of these ecosystems have been identified (hotspots) in the RAMSAR inventory. However, many of these groundwater dependent ecosystems have not been recognized as such. As part of this activity, an inventory of these ecosystems for the 13 countries of the project will be prepared in cooperation with RAMSAR and national authorities. Then hotspots could be selected for replication of the methodology and the model.

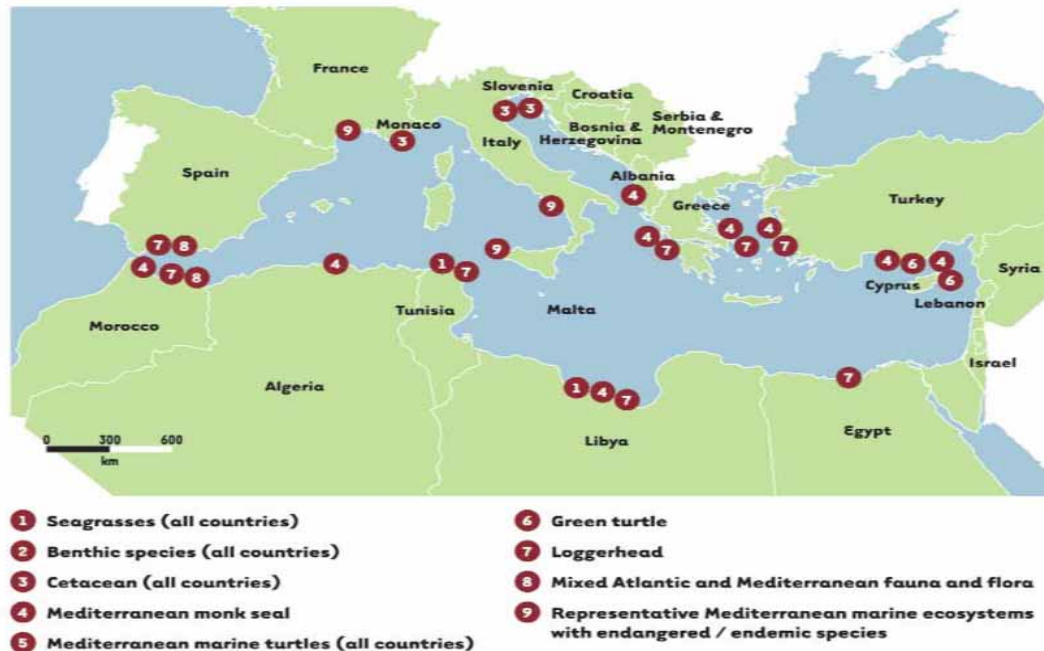
2.3.3 Investments in Coastal Zone Management(World Bank)

For the analysis of the projects, see Annex 1.

Demonstration	Demonstration Project Sites	Country	Status
Alexandria Coastal Zone Management	Lake Mariut	Egypt	Early Implementation
Neretva and Trebisnjica River Basin Management	Neretva Delta	Croatia, Bosnia Herzegovina	Ongoing
Integrated Coastal Zone Management – Mediterranean Coast	Lake Nador	Morocco	In preparation

2.4 Conversion of Critical Habitats; Overexploitation of Marine Living Resources; Alien Species Introduction

The Mediterranean Sea is one of the global centers of marine biodiversity. One out of four of its marine species are endemic. It is the last breeding ground of the endangered blue fin tuna, home to 15 cetacean species, three marine turtle species and the globally endangered monk seal. Its ecosystems support important fisheries with over 100 species of commercial importance. It is the place of choice for one third of the world international tourists. The Mediterranean is a biodiversity priority, it is a global cultural symbol and it is the source of welfare for a very large community of marine resource users.



For centuries the Mediterranean Sea has been subjected to growing human pressures bringing about various types of damages to the marine environment and exercising a direct negative impact on species and on their habitats. Uncontrolled coastal development, population expansion, increasing coastal tourism, unregulated and unsustainable fishing, freshwater damming, over extraction of freshwater (including from aquifers) and pollution are the greatest threats to the marine and coastal ecosystems. Climate change is also considered an important impending threat to the Mediterranean Sea basin. Specifically, the TDA for the Mediterranean Sea identified the following major transboundary concerns: degradation of coastal habitats and the decline of biodiversity, overfishing, degradation of marine water quality, elements affecting human health.

2.4 Conservation of Biodiversity (SPA RAC, WWF MedPO)

The objective of the Biodiversity Component of the MedPartnership is reverse these degradation trends and to *'maintain the long-term function of the Mediterranean LME through the establishment and sound management of an ecologically-coherent network of MPAs combined with the sustainable use of renewable marine resources'*¹⁵. The Biodiversity

¹⁵Mediterranean countries already dispose of national and regional instruments, such as the Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean and its related Strategic Action Program for the

component of the MedPartnership has two main pillars: the WWF Mediterranean Programme office (WWF-MedPO) is responsible for the **MedPAN South Project** (2009-12), with main focus on the strengthening of existing MPAs, while UNEP-MAP RAC/SPA leads the **MedMPAnet Project**, with primary aim to establish new MPAs. Together they aim at enhancing the effective conservation of regionally important coastal and marine biodiversity features by:

1. supporting the countries in the south and east of the Mediterranean to improve the management effectiveness of their MPAs
2. promoting the establishment of new MPAs
3. strengthening MedPAN, the Mediterranean network of MPA managers.

What follows is a sample of the many activities foreseen under the Biodiversity Component of MedPartnership.

(I) Pilot Projects On MPAs Design And Management (WWF MedPO)

	Algeria	Croatia	Turkey	Tunisia	Libya
<i>Geographical scope</i>	National Park of Taza (NPT), in the province (<i>wilaya</i>) of Jijel (north-east of Algeria)	National Park Brijuni National Park Kornati National Park Mljet Nature Park Lastovo Archipelago Nature Park Telascica	Kaş-Kekova Specially Protected Area (SPA) (south-west of the Turkish coast)	Cap Nègro - Cap Serrat MPA in the Kroumirie-Mogods region (north-west of Tunisia)	Coast and marine areas in the eastern region of Libya
<i>Objective</i>	To support the NPT in the development of a management plan of the marine area	To assist the managers of 5 MPAs in developing their	To develop and implement the management plan of the	To establish an effective management unit of the Cap Nègro -	To assist the Environmental General Authority (EGA) of Libya in

Conservation of Mediterranean Marine and Coastal Biological Diversity (SAP BIO), adopted in 2003, to meet this objective. As a result, Mediterranean countries have already established a number of MPAs. Indeed, the level of protection of the Mediterranean Sea biodiversity is largely inadequate: the total of protected areas in the Mediterranean protects less than 1% of the total sea surface (4% including the Pelagos Sanctuary), MPAs are mostly concentrated in the northern shores, not ecologically representative of the Mediterranean biodiversity and overall not effectively managed. As the SAP-BIO clearly states, there is a critical need to review the existing MPA and coastal PA networks to achieve both conservation and sustainable use benefits (fisheries, tourism, etc.), thus bridging the BD-1 and BD-2 strategic priorities for biodiversity. More MPAs are needed (in particular in the countries of the south and east of the Mediterranean), better placed and effectively managed.

	Algeria	Croatia	Turkey	Tunisia	Libya
	adjacent the Park, through participatory process, and the preparation of the necessary documents (<i>dossier de classement</i>) for the official designation of this area as MPA	management plans (including monitoring and evaluation as well as business plans) through participatory process	marine component of the Kaş-Kekova Specially Protected Area (SPA) through participatory process	Cap Serrat MPA and ensure the financial framework to sustainably manage the future MPA	establishing the first MPA the Libyan coasts, while improving their knowledge and technical capacity on marine biodiversity assessment and MPAs design
Partner	National Park of Taza - Direction Général des Forêts – MATET - Commissariat National du Littoral (CNL) - Ecole Supérieure des Sciences de la Mer et de l'Aménagement du Littoral (ESSMAL) - University of Jijel	Ministry of Culture - Environmental Association SUNCE - the 5 marine parks - State Institute for Nature Protection (SINP) - several MPA authorities at County level	EPASA - University of Halic (Istanbul)	Agence de Protection et d'Aménagement du Littoral (APAL) - Direction Général des Forêts (DGF) - Commissariat Régionales de Développement Agricole (CRDA) de Beja	EGA - Marine Biology Research Centre (MBRC) of Tajura

(ii) An Innovative Capacity Building Program

It was developed in collaboration with UNEP-MAP RAC/SPA and with the technical support of National Oceanic and Atmospheric Administration (NOAA), targeting MPAs managers, practitioners and officials of relevant authorities and institutions in the 12 countries participating in the project. The program involves the following activities:

- 3 Regional Training Workshops targeting priority needs relative to MPAs for target audience
- An Implementation Program (following the regional training) to ensure that the knowledge acquired is applied in the field
- A Mentor program to create a network of support among MPA managers and to begin the process of training the trainers
- A feasibility study to develop a long term strategy to deliver capacity building to MPAs in the Mediterranean
- The development of management tools/guidebooks tailored to MPAs managers to enhance management effectiveness of the MPAs in the Med

(iii) Communications Activities

They are aimed to:

- Strengthen and develop the community of Mediterranean MPA practitioners who share common objectives, actively exchange know-how, and support each other (promote the MedPAN network of MPAs managers in the countries of the south and east of the Mediterranean)
- Ensure the visibility of work on MPAs more in general, and promote its importance in the institutional and financial framework of the Mediterranean.
- Raise awareness of the importance and value of MPA and MPA network and the role of MedPAN in the Mediterranean.

(iv) Main Achievements (2009-10)

Overall a solid partnership was developed with all relevant national and international institutions and organizations involved in MPAs establishment and management in the Mediterranean

At pilot project level

- Inter-sectoral committees (Steering Committees) established at national and/or local level in Algeria, Croatia, Tunisia, and Turkey to assist the project implementation and ensure the institutional support to field activities and the long-term success of target MPAs. Committees include all relevant authorities that have a direct or indirect role in the management of the selected MPAs.
- The awareness, technical capacity, and stewardship of public institutions, decision-makers and MPA managers and lead staff as well as key stakeholders was raised through a series of tailored training on MPA design and management planning which targeted around 200 people from the five pilot projects.
- Robust and effective activities to involve local stakeholders of the pilot sites of the project, including consultation workshops, regular informal meetings, media communication, and international field visits.

Specifically in :

- **Algeria:** A fully participatory process to develop the management plan of the marine area adjacent the Taza National Park (north-eastern region of Algeria) was launched by the Park staff and is involving all local stakeholders

as well as the other 2 coastal National Parks and all national competent authorities

- **Croatia:** All five existing MPAs of Croatia have embarked in the coordinated development of their management plans. The project is thus leading to a standardization of the MPA management planning process in Croatia, while enhancing the collaboration among MPA staff, central administrations, decision-makers and NGOs
- **Libya:** Ain Ghazela lagoon (north-eastern region of Libya) was identified as a priority marine and coastal area for protection and recently officially declared as MPA. Baseline studies have been completed while a detailed work plan aimed to building local capacity and awareness on MPA has been completed and is currently under implementation
- **Tunisia:** A first comprehensive analysis for a long-term financial framework to sustainably manage Tunisia MPAs was finalized
- **Turkey:** The pioneer development of a participatory management plan for Kaş-Kekova SPA, through *ad hoc* training workshops that guide the national authority for MPAs and all relevant stakeholders in the step-by-step development of the management plan, is largely contributing to the national strategy aimed at strengthening the system of MPAs in Turkey.

Capacity building programme

- In 2009-2010, WWF Mediterranean and its partners contributed to the building of the capacities and skills of more than 200 MPAs managers, practitioners and officials of relevant institutions in the target countries through a series of training workshops organized both at regional and national level (in the framework of the pilot projects) in the countries involved in the demonstration projects
- In early 2009, the first Mentor Programme in the Mediterranean was officially launched including 12 Mentors from relevant authorities for MPAs of the concerned countries. This is the first step along the process of creating a professional network of trainers, which will ensure the sustainability of the capacity building programme beyond the duration of the project.
- In early 2009, a capacity building and expertise assessment for MPAs managers and practitioners was conducted for the first time in the 12 countries of the south and east of the Mediterranean
- Innovative and fully interactive training courses on MPAs management planning and planning for sustainable tourism in MPAs were organized in

Tunisia (2009) and Turkey (2010) for MPAs managers, practitioners and officials of relevant institutions and authorities from the 12 countries of the project

- Comprehensive training manuals on MPAs management planning and planning for sustainable tourism in MPAs - adapted to the Mediterranean context – were developed and made available to the participants to the training workshops
- An extensive system of technical assistance was established and implemented to support MPAs managers and other relevant target audience in the on-the-ground implementation of the knowledge and tools acquired during the training workshops
- Networking of and experience sharing among MPAs managers and officials of relevant institutions in the region (north – south and east-west) were ensured through the organization of a series of tailored exchanged visits
- An MPA experts and expertise database was established and is accessible online on the MedPAN’s website (<http://experts.medpan.org>)
- Ongoing evaluation of the capacity building programme is ensured to enhance the achievements of tangible results in the field and ensure effective adaptive management.

Replication Potential: Following are the findings of the analysis from a replication perspective of the approach and activities, both completed and planned, of the Biodiversity Component of MedPartnership:

- (1) the main effort has been concentrated in improving the effectiveness of existing and newly established MPAs by building the capacity of Mediterranean littoral project countries in MPA management, and in the identification and design of new MPAs ;
- (2) This has resulted in the *de facto* establishment of a regional mechanism for the replication of good practices in MPA management planning, strengthening of human resources, and networking among regional players. This mechanism is being proven quite effective.

In this case therefore, the replication activities of MedPartnership should concentrate on enhancing the sustainability of the mechanism for replication and capacity building that has been successfully put in place through this Component of MedPartnership.

2.4.2 Sustainable use of fisheries resources through the application of ecosystem-based management approaches (FAO)

The two major threats that stem from fishing are direct damage to biodiversity and damage to essential habitats. The widespread use of small mesh fishing gear as well as excessive fishing of commercial species are the foremost means by which biodiversity is damaged. Although no data seem to indicate that any fishery resource is under threat of collapse, it is widely acknowledged that overfishing has taken place in the Mediterranean for a long time. Red coral (*Corallium rubrum*) in the western Mediterranean for instance is heavily over-exploited, as are also some edible bivalve species such as *Lithophaga lithophaga*. Moreover, the negative impact of overexploitation of marine resources is also felt on many non-target fishery populations. High conservation priority species such as marine turtles, the Mediterranean monk seal, and marine mammals fall prey to by-catch due to lack of selective fishing gear.

Title of Pilot	Country/Site	Partner	Status
Solutions to by-catch mitigation for protected / endangered species of fish and invertebrates and/or for iconic vertebrate species	Tunisia	FAO	Early Implementation
Supporting fisher's participation in monitoring and management of coastal MPAs	Morocco	FAO	Early Implementation

(i) Solutions To By-Catch Mitigation For Protected / Endangered Species Of Fish And Invertebrates And/Or For Iconic Vertebrate Species

Despite some attempts to apply various EAF principles to the Mediterranean, the situation is far from being satisfactory.

The direct commercial exploitation of especially vulnerable fish species (such as some chondrichthyan species), causes important conservation problems, as reported in many of the SAP BIO national documents. According to the information available, some cartilaginous fish, and some other organisms, need priority protection from the effects of both direct fisheries and bycatch.

Vulnerable invertebrates are also subject to commercial exploitation throughout the Mediterranean, as are red coral, some sponges and the endangered mollusks noble pen shell (*Pinna nobilis*) and sea date *Lithophaga lithophaga*, the two latter being already protected under the SPA Protocol of Barcelona Convention (several endangered sponge species are also enlisted in Annex II).

Marine mammals, sea turtles and seabirds are not harvested commercially in the Mediterranean, but they are captured as by-catch in a number of fisheries. It is thus important to reduce the level of bycatch of these particularly sensitive species.

This demonstration project will be carried out in Tunisia, based on the work already carried out by Tunisian research and higher education institutions. The first part of the work will be the identification of some particularly relevant fishing, as well as areas where by-catch is known to be important. Based on this identification, a particular area and métier(s) will be selected. A site-based demonstration project for the reduction of the bycatch levels will be designed for this area-fishery combination and tested for at least one full fishing season. Spatial and temporal fishing restrictions in critical areas will be particularly considered, together with technical measures, if they are judged appropriate for the particular métiers analysed. Adequate dissemination actions and materials will be planned and organised as an integral part of the work.

The demonstration project will be implemented through an adaptive approach with the involvement of directly concerned stakeholders, in close cooperation and basing itself on the results already obtained by research programmes being carried out or planned in the country, as adequate in cooperation with other existing regional initiatives. The national fisheries staff will be supported by appropriate international consultants, if and as necessary, to achieve the objectives of the activity.

Replication potential: The bycatch of sensitive or iconic species is a generalised problem across the Mediterranean, so this project has a high interest for replication. The actual potential for replication is also high, even though it is likely that the experience cannot be directly transferred, since by-catch is very area- and gear-specific. Transferring the experience will be more at the level of the procedures followed to identify the most adequate measures, so that this process can be replicated in other sites, than in the direct transfer of the by-catch reduction measures themselves. In any case, this is the more important replication element, since the process of getting local participation and commitment to the reduction of by-catch is often more difficult to achieve than the identification of gear changes.

(ii) Supporting Fisher's Participation In Monitoring And Management Of Coastal MPA's

Most, if not all, of the areas classified as Marine Protected Areas (MPAs) in the Mediterranean are located in the areas exploited by small-scale fisheries. This situation leads to frequent conflicts on the use of these areas, with a particular emphasis on intensive

fishing activity conflicting with conservation purposes. It is now widely recognized that MPA's can only be successful if directly affected stakeholders, especially fishing communities operating in the area, effectively support the measures, and participate in its management. However, to date few attempts to involve fishers in the support and management of MPA's have been carried out, and most of these have not produced positive results. Enhancing fishing stakeholder's participation in the management and protection of these MPA's requires understanding the drivers behind fisher's decisions, including which conditions could drive fishers to support the operation of these MPA's, and devising approaches adequate to them.

The Al-Hoceima MP in Morocco was selected for this work, taking account of the good contact already present with the ArtFiMed project. The first element in the process will be supporting the participation of the fisher community in the monitoring of their own fishing activity, to build confidence in the community. This will be carried out by individual fishers, who will be identified by the project and MPA staff in collaboration with the community. A group of experts will, in collaboration with the community, elaborate guidelines, technical manuals, training content and appropriate survey material.

After the selected fishers have received training and the necessary toolkit, an expert team will support the fishers test the system and make any necessary improvements. A regular system of gathering input and data analysis will be updated on the basis of the existing system. To ensure community buy-in, a system for the regular restitution of the research results to the community will be put in place. From the second year and with a yearly basis, the results will be presented and appreciated jointly by fishers and scientists in a workshop.

During the third and fourth years, a yearly workshop (with the participation of representatives of fishermen, research, fisheries institutions and representatives of the MPA) will be organized to identify and develop proposals for sustainable management of fisheries in MPA, including the participation of fishers in the implementation, monitoring and control (MCS) of identified measures. The final result should be a set of proposals for the creation and recognition of a specific MPA management advisory committee, including fisher's representatives.

Replication potential: Considering that there is a large number of Marine Protected Areas already in place or being planned in the Mediterranean, and that many of these overlap with traditional fishing areas for artisanal fishers from many countries, it is essential to increase fisher participation in the planning and running of MPAs. This pilot project aims precisely at developing ways to increase this participation, so its potential benefits are very high. Because the participation of fishers in these activities will depend very much on the cultural background, the actual replication may require some adaptations to the cultural

and even physical reality of each site. Fostering replication of this work will involve considering carefully the conditions of each MPA and the potential motivation of fishers, and these should be evaluated in the adaptation of the methodology developed during the pilot project.

2.5 Priority Replicable Practices

Given the early stages of implementation of MedPartnership, the identified PRPs can only represent a preliminary indication of those stress reduction practices that in the light of the Portfolio Assessment appear to have a particular relevance. The identification is based on a qualitative evaluation of the following parameters:

- Relevance to TDA and SAP priorities
- Estimated regional replication
- Overall achievable stress reduction
- Socio-economic feasibility
- Synergies with other programs and/or political processes (EU programs, etc.)
- Likelihood of replication actually occurring.

As stated earlier in this Report, the selection of PRPs cannot be a scientific exercise, but will contain elements of subjectivity.

It has to be stressed that it clearly emerges from this Portfolio Assessment that – thanks to the sound initial design of MedPartnership - all replicable practices taken into consideration address important transboundary concerns, and - as MedPartnership progresses - will all deserve attention, and will require some level of dissemination and promotion of replication effort.

The PRPs that have been tentatively identified represent however targets for a primary focus of the replication activities, at least at the present early stage of MedPartnership implementation. As MedPartnership advances in implementation, more PRPs will be identified and proposed for action at future Steering Committee meetings. This refers in particular to MEDPOL industrial pollution reduction demonstrations, including PCBs, and the investment projects of the World Bank.

Following is the list of PRPs – as of March 2011 - grouped according to their readiness for inclusion in the Replication Work Plan, expected timing, and transboundary concern. As stated, more PRPs will be added, and the Work Plan revised and updated, on a yearly basis.

Group 1 (possibly ready for action in 2011) – *Non Point Sources: Industry*

Transfer of Environmentally Sound Technologies – TEST (UNIDO) - This method to reduce the water and environmental footprint of small and medium-sized industries while enhancing their productivity, was tested with success in the Danube River Basin and upon request of UNEP MAP has been adapted to the Mediterranean context. By the end of the Sub Component 's implementation (2012) there will be a set of best practices for a number of industrial sectors ready for dissemination, scaling up and market uptake of cleaner production services within the 3 project's countries (Egypt, Tunisia, Morocco) as well as in all other MedPartnership countries, with priority on Turkey for its well developed small-medium sized industrial sector, highly concentrated along coastal areas. The potential for regional replication is very high, as well as the likelihood for replication actually occurring, and the overall pollution reduction eventually achievable.

Group 2 (possibly ready for action in 2012) – *Pressures on Coastal Zona and Habitats; Non Point Sources*

Improving the Effectiveness of New and Existing Marine Protected Areas (SPA RAC, WWF MedPO) - Building the capacity of Mediterranean littoral project countries in MPA management – a top conservation priority - has been the primary focus of the Biodiversity Component of MedPartnership. This has resulted in the de facto establishment of a regional mechanism for the replication of good practices in MPA management planning, strengthening of human resources, and networking among regional practitioners. This mechanism is being proven quite effective. The replication activities of MedPartnership should concentrate on enhancing the sustainability of the mechanism for replication and capacity building that has been successfully put in place by MedPartnership.

An Integrative Methodological Framework (IMF) for Coastal Zone Management (PAP RAC, UNESCO, GWP Med) – This innovative approach to coastal planning consists in the merging of the methodologies for surface water (IWRM), coastal aquifers, biodiversity and land management, to provide a comprehensive and coherent response to the many anthropogenic and natural threats that are stressing the coastal Mediterranean environment. This novel practice is being for the first time tested by MedPartnership in the coastal area of the Buna-Bojana Delta shared by Montenegro and Albania. If the results of this experiment will confirm its applicability and effectiveness as a tool for coastal/marine area use capacity zoning, this PRP would definitely deserve a focused replication and dissemination effort.

Group 3 (possibly ready for action in 2013-14) – *Point Sources: Nutrient Removal; Pressures on Coastal Zone and Habitats*

Non Conventional Nutrient Removal Systems (World Bank) - Reduction of nutrient discharges is one of the top environmental priorities in large sections of the Mediterranean. Hence, the introduction and proliferation of wastewater treatment systems enhanced for nutrient removal is one of the major expected outcomes of MedPartnership as well as of other parallel programs (e.g.: Horizon 20-20). Several systems, novel to the region (to be selected among the following: Activated Sludge; Constructed Wetlands 2-stage systems; Extended Aeration; Membrane Bio-Reactor; Trickling Filter) are going to be constructed on a pilot basis for small Croatian coastal towns as part of a major investment project that will improve WWT along the Croatian coast. The technical – economic feasibility of the systems is presently being evaluated in view of a final selection (2011).

Disposal and Reuse of Treated Waste Waters (World Bank) – Also this PRP addresses the major transboundary concern represented by point source pollution discharges and nutrient enrichment of the Mediterranean coastal marine environment. Should the systems that will be tested in Tunisia prove to be technically, environmentally and economically feasible, their replication potential would be large, and the overall pollution reduction that could be achieved very substantial. Moreover, these systems, if combined with managed aquifer recharge of coastal aquifers, could have beneficial impacts in constraining marine intrusion into the aquifers, and in enhancing the buffering function of groundwater in view of increased climate variability and change. MedPartnership will follow with the utmost attention the development of this initiative, and report to the SC in the coming years.

Mapping the Vulnerability of Coastal Aquifers (UNESCO) – One of the merits of MedPartnership has been its very innovative attention to the role of coastal aquifers in sustaining life and complex ecosystems along coastal environments. It is in fact the first time that coastal aquifers are addressed in the context of protecting the marine environment. As part of this new approach, the preparation of coastal aquifers vulnerability maps is essential. They will support decision-makers in planning coastal land use with full consideration of the need to protect aquifer quality and recharge, thus avoiding amongst others the discharges of polluted groundwater along the Mediterranean coasts, whose importance is often disregarded. The methodology, adapted for application in the MedPartnership countries, is being tested in Tunisia and Croatia. These essential planning instruments should be available in all countries, and could be prepared locally with relative ease, after prior capacity building.

PRIORITY REPLICABLE PRACTICES	Croatia	Bosnia Herzegovina	Montenegro	Albania	Turkey	Lebanon	Syria	Egypt	Libya	Tunisia	Algeria	Morocco
TEST	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Non Conventional Nutrient Removal Systems	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Disposal of TWW and Reuse	Yellow	Yellow	Yellow	Yellow	Red	Yellow	Yellow	Red	Yellow	Yellow	Yellow	Yellow
Integrative Methodological Framework for ICZM	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
Coastal Aquifer Vulnerability Mapping	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow
MPA design and Management	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow




 Country with pilot/demo
 Country target for replication
 Country priority target for replication

Table 6. Priority Replicable Practices

3. RECOMMENDATIONS FOR A REPLICATION PLAN

The following recommendations are based on the assessment of the replication potential of the portfolio of projects and pilot demonstrations of MedPartnership which has been presented in the previous chapters. The Replication Plan will follow the structure of the Results Framework (Table 1) proposed for the replication component of MedPartnership.

3.1 Involvement of Countries

Table 5 shows the distribution per country of the various stress reduction pilots and demos at the present moment being implemented as part of MedPartnership. It also shows the countries which will be targets of replication promotion activities, and those countries which are priority targets for the replication of a specific practice. Objective of the Replication Plan will be to involve all countries in one or more activities aiming at promoting replication of RPs.

3.2 Demonstration Centers for capacity building and dissemination of lessons learnt

MedPartnership Demonstration Centers will be established towards the end of the initiative. They will relate to high priority transboundary concerns, e.g.: nutrient removal WWT systems, WW reuse and aquifer recharge, ICZM, etc.), and will provide hands on capacity

building, and dissemination of experience throughout the region. Their sustainability beyond the life of MedPartnership will be a critical element of the selection of these Centers. The Portfolio Assessment, given the early stages of implementation of MedPartnership, provides only some general indications of the possible candidate sites (i.e: one of the innovative WWT systems being constructed in Croatia; the water reuse system being designed in Tunisia; one of the TEST industries; the ICZM plan for Alexandria; etc.). MedPartnership will equip them with documentation and didactic materials, ICT tools, and training of trainers.

Table 5 - Involvement of MedPartnership countries in demonstration activities, and countries potential targets for replication.

Replicable Practice	Croatia	BiH	Montenegro	Albania	Turkey	Lebanon	Syria	Egypt	Lybia	Tunisia	Algeria	Morocco
ESM of lub oil												
ESM of lead batteries												
ESM of tanneries sector												
ESM of phosphogypsum												
PCBs ESM and disposal												
TEST												
Construction of New WWT Systems												
Rehabilitation of Existing WWT Plants												
Non Conventional Nutrient Removal Systems												
Disposal of TWW and Reuse												
IWRM												
Joint IWRM/ICZM/Aquifers												
ICZM/Aquifers Plans												
ICZM Strategies												
Aquifers Assessment												
Aquifer Vulnerability Mapping												
Aquifer/Land Mngt												
Aquifers/Wetlands												
ICZM Investments												
MPA design and Mngt												
Fisheries, By-catch												
Fisheries, MPAs												

Country with demo/pilot Country target for replication Country priority target for replication



3.3 Reports on Selected Replicable Practices

The Portfolio already provides a very good example of documentation intended to facilitate replication of stress reduction measures in the field of habitat protection and biodiversity conservation. Others will be identified on a yearly basis.

In all pilot activities carried out as part of the Biodiversity Component of MedPartnership, a standard approach for MPA management planning was applied. The *software Miradi* (which is a user-friendly program that allows nature conservation practitioners to design, manage, monitor, and learn from their projects to more effectively meet their conservation goals) and the *“How’s your MPAs managed?” Manual* (which is currently a draft document that will be further developed into a manual with case studies from the Mediterranean in 2011) are applied and, where necessary, adapted to the local context. These are two basic tools that can guide MPAs managers in the step-by-step development of their management plans. Any MPA in the region which is embarking in a management planning process can adopt these tools, while benefit from the experience gained by the MedPAN South pilot projects on how to best adapted it to the local context. *MedPartnership, as part of its replication activities, could support the finalization and publication of these documents and tools, including their translation in French and Arabic.*

Similarly, it is expected that manuals and guidelines for ICZM, Joint IWRM/ICZM, low cost nutrient removal practices, the TEST methodology applied to the Mediterranean context and others will be considered for publication and dissemination as MedPartnership progresses.

3.4 Final Medpartnership Replication Report

This document, that will represent an innovative complement to the TDA and the two SAPs, will be prepared in the years 2013-14, according to TORs to be prepared by the PMU and approved by the MedPartnership Steering Committee.

3.5 Regional Replication Workshops by category of transboundary concern

These Workshops will represent the major evants around which the replication activities of MedPartnership will revolve.

Transboundary Concern	Annual Replication Workshops	Year	Country	Lead Partner
Land Based Pollution – Point Sources - Excess Nutrient and Toxic Discharges	1) Reduction of industrial Discharges – TEST	2011 2013	Turkey tbd	UNIDO, MEDPOL, World Bank
	2) Nutrient removal and WWT systems			
Land Based Pollution – Non Point Sources	1) IWRM for nutrient reduction and erosion control	2012 2014	tbd tbd	GWP Med, World Bank
	2) Agricultural runoff reduction, the			

	experiences of the Black Sea and Mediterranean Basins.			
Anthropogenic Pressures on Coastal Zones	<ol style="list-style-type: none"> 1) The rehabilitation of the Alexandria coastal zone 2) IWRM - ICZM and Coastal Aquifers: a new approach to coastal planning 	2014 2012	Egypt tbd	World Bank, UNESCO, PAP RAC
Coverision of Critical Habitats; overexploitation of Marine Living Resources; Alien Species Introduction	<ol style="list-style-type: none"> 1) The design and Management of MPAs – MedPartnership Experience 	2012	tbd	WWF, SPA RAC
Overfishing; Use of non-selective fishing gear	<ol style="list-style-type: none"> 1) Reduction of by-catch: dissemination of procedures 	2013	tbd	FAO

The table above shows the Regional Replication Workshops¹⁶ tentatively identified as of March 2011, to be organized by MedPartnership, together with proposed timing, location and lead organizing partners. The events will be open to include selected experiences from outside the region, and from other Mediterranean programs (E.g.: EU).

Two Regional Workshops emerge from the Portfolio Assessment as feasible and needed in the short term (2011, 2012):

1) Regional Replication Workshop on the Transfer of Environmentally Sound Technologies.

Proposed Location: Turkey

Year: 2011 (tbc)

Lead Partner: UNIDO

Target audience: Industries, Industrial associations, Technical sectorial centers, Practitioners and consulting firms, Financial institutions, Environmental agencies, Ministries of industry and environment.

The regional event will include the participation of the national TEST team from the 3 countries (12-15 practitioners) as well as a selected group of MED TEST companies with the best performance results (3-5 industries), plus international sector expert (3-5). This event will be organized in close coordination with local Clean Production institutions and industrial associations.

The Regional Replication Workshop would be preceded by, and its design and structure tested through *three national events*, to take place in Tunisia, Morocco and Egypt. These

¹⁶ It has to be noted that some of these events are already scheduled as part of the activities of the various Components and Sub-components. If adopted as replication events they will expand their scope and will be designed in cooperation with the Communications and the Replication teams of MedPartnership.

events will have twofold objectives: (i) Disseminate MED TEST results to a wide range of audience, in that specific country; (ii) Illustrate the business case of TEST approach and best practices implemented in demonstration industry sectors to promote replication of TEST in industry. They will have the following structure: 1) Plenary session targeting wide audience including media to present overall results, key lessons learned, potential for replication of cross sector best practices in the country, award for demonstration companies, and 2) Panel expert working sessions organized by individual sectors (some sectors might be grouped). Two or three panel expert session will be running in parallel targeting industries within selected sectors as well as practitioners. Each panel expert working session will be chaired by an international CP sector expert. *New industries attending and participating in these panels will be offered to sign up for a site CP review audit, whose costs would be partly covered by MED TEST. This will be an incentive for replications by starting up new demonstration in other companies.*

2) *Regional Replication Workshop on MPA Design and Management: MedPartnership Experiences*

Proposed Location: tbd

Year: 2012 (tbc)

Lead Partner: WWF – SPA RAC

Target audience: Decision Makers from the Environment, Culture, Tourism, Agriculture and Fisheries sectors; key donors.

In 2012, MedPAN Organization will host the 2nd Conference of the Mediterranean Marine Protected Areas Network . This conference follows the 1st Conference that was held in Port Cros National Park in 2007. During the 1st Conference, a “Port Cros Declaration” was approved unanimously by all participants to foster the development of measures designed to improve the levels of protection and conservation of biodiversity in the Mediterranean Sea. The Conference provides the ideal setting for the organization of a 1-day High Level Event to present the achievements of the Biodiversity component of the MedPartnership to all relevant Ministers for MPAs in the MedPartnership countries. During the event, all good practices developed and implemented in the framework of MedPAN South and MedMPAnet, will be featured, as well as the findings of the feasibility study for the long-term sustainability of the capacity building delivery and replication mechanism for MPAs managers in the region, tested on a pilot basis by Medparthjership.

3.6 MedPartnership Replication Conference

This major regional event, that might be convened in coincidence with the Barcelona Convention COP, will be designed starting 2012. A proposal will be submitted for SC approval in 2013. The

Conference will mark the closure of MedPartnership, and will showcase the concrete results achieved for the benefit of Mediterranean countries, donor agencies and IFIs.

3.7 Beyond MedPartnership: a Proposal

It is suggested that the replication impacts of MedPartnership continue to be monitored after its completion in 2014. In fact it is expected that the full catalytic impact of this major GEF program will only be felt in the years to follow. This monitoring and reporting task could be taken over by MAP, and expanded to other similar initiatives as well. A proposal in this sense could be submitted for approval to the last SC meeting, and presented at the final MedPartnership Replication Conference.

ANNEX 1

REVIEW OF INVESTMENT FUND AND SUSTAINABLE MED PROJECTS

COASTAL CITIES POLLUTION CONTROL PROJECT – Country: Croatia – Funding: USD 60m World Bank loan, USD 6.4m GEF grant – The project is ongoing

The Project will contribute to improve the quality of the Adriatic Sea through investments and technical assistance to increase and improve wastewater services.



Project sites. Stars indicate potential sites of nutrient removal plants.

Disposal of untreated wastewater along the Dalmatian coast has a significant impact on the quality of the seawater and is a constraint to tourism development.

Forty-four percent of the population has adequate wastewater collection systems and only 25% of the collected wastewater is treated. The link between poor wastewater services and the degradation of seawater quality in Croatia's Adriatic coastline is well established. The

degradation of seawater quality in some parts of the coastline due to discharges of raw sewage has already resulted in visible problems, including localized eutrophication and phytoplankton blooms, as well as less-visible contamination of the marine life by organic and non organic micro-polluting substances. Seawater pollution affects some of the main population centers of Rijeka, Sibenik and Zadar, and importantly, *many small and medium municipalities along the coast and on the islands*. Although some efforts are already under way to address the problem (particularly in Dubrovnik, Split and Pula), the cost of inaction could be disastrous for the potential of further growth in the tourist industry, on which Croatia's development depends to a great extent. The project will strengthen the institutional capacity to manage and monitor the large network of conventional WWTPs (19) that will be built as part of the project (in addition to the 11 already built under a previous phase). The GEF grant will have the specific objective of reducing organic pollution and nutrient emissions from point sources in selected Croatian towns, that are either located directly at the coast or near it. This requires the construction of WWTPs which are new to the region specifically designed for the removal of organics and nutrients.

Summary of potential GEF project sites

Project	Design Population Equivalents (GEF)	Recipient water	Nutrient removal technology		Estimated total investment cost		
			suggested to date	recommended comparison for final decision	[million US\$]	[million EUR]	[million HRK]
Cres	10.500	Sea	MBR	MBR - AS	7,5	4,7	34,0
Poreč Materada	29.000	Sea	MBR	MBR - AS - EA	15,4	9,6	69,5
Metković	10.000	Neretva River	AS	AS - EA - TF	3,5	2,2	15,9
Opuzen	3.000	Neretva River	EA	EA - CW - TF	1,4	0,9	6,5
TOTAL	52.500				27,8	17,4	126,0

AS ... Activated Sludge

CW ... Constructed Wetland (2-stage system)

EA ... Extended Aeration

MBR ... Membrane Bio-Reactor

TF ... Tricking Filter

1 EUR = 7,24 HRK

1 EUR = 1,60 US\$

Replication Potential: This project contains several practices of high replication interest: the institutional and monitoring aspects; the technical and economic feasibilities of small town WWTPs; the innovative technologies applied in the nutrient removal pilots funded with the GEF grant (locations and type of treatment yet to be confirmed – decision expected in mid 2011).

NERETVA AND TREBISNJICA RIVER BASIN MANAGEMENT PROJECT – Countries: Bosnia Herzegovina and Croatia – Funding: USD 8.4 GEF grant, USD 13.1 co-financing –The project is ongoing¹⁷.

The project is intended to promote IWRM and ICZM practices in watersheds draining into the Mediterranean, including groundwater systems and balancing flows, as a mean to protect coastal-marine habitats of transboundary significance and reduce pollution from non point sources and sediment loads.

The Delta Area of the Neretva River in Croatia and Bosnia Herzegovina – MedPartnership Interventions (including two WWTPs of the Coastal Cities Program in Croatia)



The Neretva-Trebinjica basin, shared by Croatia and BiH, is part of the wider Dinaric Karst Aquifer System, one of the world's largest. The general flow of this huge groundwater reservoir is towards the Adriatic Sea. The gradient is generally steep, creating a very favorable environment for hydropower generation. Groundwater eventually enters the coastal area through few rivers (the Neretva-Trebinjica being the main one) and more importantly through strong submarine groundwater flows that characterize the coastal areas of Istria and Dalmatia. The total amount of groundwater entering the coastal environment with its

¹⁷ While various studies are in progress, the Nature Park Hutovo Blato (Ramsar site), the Vejtrenica cave, four Protected Areas in the Croatian delta, and the Bacinska lake in the delta, all receive support for physical improvement, tourist access and protective measures, and /or by conducting biomonitoring and preparing management plans. The wastewater treatment plants of Trebinje (activity completed), Ljubuski, Bileca and Konjic are in different stages of rehabilitation, and should all be completed by 2013. The study on the management of salinization in the delta is nearly finished and pilot to demonstrate low-water irrigation systems for fruit orchards in the delta is in preparation.

load of nutrients and other contaminants is not known, but certainly very large: it is estimated that karstic groundwater is the largest source of freshwater entering the Adriatic sea.

The main environmental and geological processes active in the Neretva River valley and its coastal area relate to (i) flooding, (ii) saline intrusion in the groundwater of the coastal area, and (iii) the still relatively low, but increasing nutrient pollution of the surface water, groundwater and the coastal marine waters. The first two phenomena are linked in various ways to the operation of the hydraulic infrastructure present in the basin (hydro-power dams, dikes), and to the excessive withdrawal of groundwater in the delta plain. The increasing high levels of N/P being discharged by the rivers and by freshwater seepage from karstic groundwater indicate considerable issues of wastewater treatment and agricultural runoff throughout the basin. Industrial pollution (textile industry, industry of milk and dairy products, industry of non-alcohol beverages, breweries, wine industry and slaughter-houses) and mining are also cause of concern. The coastal area, with the delta of the Neretva, represents a highly valuable resource, being a primary agricultural land, a regional hot spot for biodiversity, sustaining Adriatic fisheries and filtering/reducing sediment and pollution loads carried downstream by the rivers and groundwater of the basin. Its integrity is however being seriously threatened by lowering water tables, and saline intrusion.

The project will address all these issues of concern through implementation of IWRM and ICZM, and through specific interventions of rehabilitation of hydraulic and WWT infrastructure.

Replication Potential: In addition to the implementation of basin-wide IWRM, three aspects of the project, namely the focus on coastal karstic hydrology, the methods to control saline intrusion along the coastal region, amongst other through precision irrigation, and the rehabilitation of existing WWTPs, will represent replicable experiences to be disseminated among Adriatic coastal communities, and more broadly throughout the Mediterranean.

ALEXANDRIA COASTAL ZONE MANAGEMENT PROJECT(Investment Fund) - Country: Egypt; Funding: USD 647m World Bank loan, GEF USD 7m grant. The project is in its early implementation stage (recruitment of project staff).

The TDA has identified several “hot spots and sensitive areas” on the northern coast of Egypt, which for several decades have been experiencing a continuous increase in population, development, and environmental degradation. Two of these “hot spots” are located in Alexandria, namely El-Mex Bay and Abu-Qir Bay. Lake Mariout is one of the major sources of conveyance of land based pollution to the El-Mex Bay.



According to the TDA, the pollution load reaching the Mediterranean Sea via the two hot spots in the Alexandria area are significant with more than a third of the total Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) discharges in the area. The main sources of pollution are untreated or partially treated domestic and agricultural wastes rich in phosphorus and nitrogen, and industrial wastewater. Eutrophication phenomena in the lakes and open sea have been reported and the lakes are losing their attraction as recreational resorts which negatively affect the livelihood of the local population. The project aims at improving institutional mechanisms for the sustainable management of coastal zones in Alexandria and reducing land-based pollution to the Lake Mariout and subsequently the Mediterranean Sea. To achieve this aim, pilot innovative and low-cost technologies for pollution reduction originating from agricultural drainage water and rural domestic wastewater will be tested, including in-stream treatment (bio-films), aerators, engineered wetland and reed removal.

Replication Potential: The replicability of the various low cost technologies for pollution reduction will be evaluated as soon as the project will have reached the full implementation stage. In-Stream Treatment maybe of particular interest for a number of Mediterranean littoral countries, e.g.: Egypt.

The project includes one of the major efforts in coastal zone planning in urbanized environments ever undertaken in the region, that might become exemplary in the Southern Mediterranean.

NORTHERN TUNIS WASTEWATER PROJECT (Sustainable MED)- Country: Tunisia; Funding: USD 52 m World Bank loan, 8 m GEFD grant- The project is starting implementation.



The proposed Project, addressing the issue of pollution in the Gulf of Tunis – the biggest pollution hot spot in the country - seeks to ensure that the transport infrastructure for TWW in the North Tunis area will be designed responsible local authorities with the goal of fostering its reuse by farmers. This will include construction and operation of transfer infrastructure and of a storage basin allowing separating the TWW according to its quality and suitability for reuse. Because of the poor quality and reliability of water made available to farmers, there has been significant resistance for using TWW among farmers. The TWW Transfer to be built as part of the project has the following characteristics: from the existing discharge point, at the end of a concrete pipe section recently rehabilitated, the TWW from WWTPs (already segregated on the basis of its quality) will be transferred into two HDPE pipelines of 1800 mm of diameter, which will convey the TWW under the El Khelij Canal, through a siphon, and along an existing dirt road until a storage and regulation basin located about 2.7 km north from the discharge point. Conveying the TWW into these two pipelines will reduce the recontamination which is currently taking place between the discharge point into the El Khelij canal and the seashore, and makes it unsuitable for reuse in agriculture. The GEF Grant will fund the installation of these pipelines, which will be implemented through a separate contract to be fully funded by the GEF grant.

Replication Potential: The TWW Transfer and Reuse System to be piloted by the project may have a strong replication potential beyond the project area, and throughout the region. In addition, the project is considering using TWW to recharge coastal aquifers of the Gulf of Tunis, another highly replicable practice that may help prevent salinization and marine intrusion into coastal aquifers.

ENHANCED WATER RESOURCES MANAGEMENT PROJECT (Sustainable MED) – Country: Egypt
– Funding: USD 34.3m World Bank loan, USD 6,68 GEF grant. The project is in preparation.

The project development objective is to improve water availability and quality in response to growing water scarcity and climatic variability including flood and drought through introduction of enhanced systems of water resources management in Egypt, which will lead to improving the livelihoods of the poorer populations living the in the Nile Delta and help improve global environment through reduction of the loads of pollution reaching to the Mediterranean Sea. Two components have particular interest for replication purposes:

- (i) Strengthening water quality monitoring of the Nile system (the river and its two main branches, canals, drains, and Lake Naser) with emphasis on water quality hot spots where drainage water is mixed with irrigation canals for reuse and/or discharged into the Nile or inland and northern lakes; component will include a pilot scheme to help integrate the on-going interventions funded under different arrangements with *innovative technologies for improving water quality in the drain.*
- (ii) Activities aiming at reducing pollution of the groundwater reserves and improving management of groundwater aquifers for their sustainable use. More specifically, this component will carry out a *pilot scheme for improving water quality and availability in an area where groundwater is subject to pollution from agricultural, municipal and industrial sources.*

Replication Potential: In principle, the project includes at least two highly replicable practices, related to the improvement of water quality in reservoirs drains, and of the quality of groundwater subject to contamination from agricultural sources.

INTEGRATED COASTAL ZONE MANAGEMENT – MEDITERRANEAN COAST (Sustainable MED)

– Country: Morocco – Funding: USD 20m World Bank loan and country input, USD 5.1m GEF grant. The project is in preparation.



The objective of the proposed project is to support integrated coastal zone management approach in Morocco to reduce pollution and loss of biodiversity and to enhance communities' resilience to climactic risk at selected sites in its Mediterranean coast. Coastal ecosystems along lagoon of Nador and river mouth of Moulouya are threatened by both pollution and changing climate.

The project will facilitate the Government institutional reform – institutionalizing ICZM approach, and further facilitate regional exchange and coordination. The project will concentrate in the following sites:

- selected sites in Nador, Driouech and Berkane provinces including the Ramsar site - Lagoon of Nador.
- Rural Commune of Beni Chiker, including the Ramsar site - Cap des Trois Fourches,
- Rural Commune of Boudinar, and Coast of Saidia-Ras El ma including the Ramsar site - river mouth of Moulouya.

The following activities will be developed:

- (i) Improving fisheries management and promoting sustainable (artisanal) fishing. The project would finance: establishment of fishers' cooperatives, training with improved

artisanal and other fishing techniques, building basic fishing infrastructure (fish landing areas, ice maker), and diversified fishing activities (fish processing, sea weed exploration) to become more resilient to climate variability;

- (ii) Improving waste management and reducing pollution discharge into the lagoon. The financed activities would include: establishment of an inter-commune, operational and practical waste collection system, waste collection infrastructure, technical and managerial support for waste management, improved waste treatment technologies, as well as education and dissemination of waste management for the population. This component will also complement the on-going establishment of Nador waste water treatment station which is expected to improve wastewater collection and treatment to reduce discharge of solid and water waste into the lagoon;
- (iii) Coastal zone ecosystems conservation. The financed activities will support conservation and restoration of key coastal resources: piloting a special protected and tourist area for the Cap des Trois Fourches, infrastructure building, restoration of part of lost dunes;
- (iv) Pilot ICZM planning with the focus on wetlands conservation and eco-tourism. This will pilot coastal zone planning and strengthening conservation of Ramsar wetlands, promotion of ecotourism (including the development of 'greenbelts', birding areas, organic agricultural products), public and private partnership, role of women, dissemination of the concept of ecotourism.

Replication potential: All the above activities would in principle be replicable in the region, as part of ICZ management, including land based pollution reduction, and fisheries management.

ANNEX 2

4.3 Replication Promotion Activities					
	2010	2011	2012	2013	2014
4.3.1 Overall Coordination	Collection of Information, Desk Studies, Definition of Strategy	Preparation of Overall Portfolio Assessment Preparation of Replication Plan for 2011 for SC approval Oversight of Activities	Oversight of Activities Preparation of Replication Plan for 2012 for SC approval Updating of Portfolio Assessment	Oversight of Activities Preparation of Replication Plan for 2013 for SC approval Updating of Portfolio Assessment	Oversight of Activities Preparation of Replication Plan for 2014 for SC approval Updating of Portfolio Assessment
4.3.2 Establishment Demonstration Centers for capacity building and dissemination of lessons learnt			Review of potential sites	Proposal for Demo Centers prepared and presented to the Steering Committee for approval	Demo Centers established
4.3.3 Publication of Reports on Selected Replicable Practices		Preparation, translation and publication of selected reports	Preparation, translation and publication of selected reports	Preparation, translation and publication of selected reports	Preparation, translation and publication of selected reports
4.3.4 Final Regional Replication Report					Preparation, translation and publication of Final Report on Replication
4.3.5 Regional Replication Workshops		Regional Workshop Reduction of Industrial Discharges - TEST experience, Turkey	RW on IWRM for Nutrient Reduction and Erosion Control RW on ICZM and Coastal Aquifers RW on The design and Management of MPAs – Medpartnership Experience	RW on Nutrient Removal and WWT Systems RW on the Reduction of by-catch: dissemination of procedures	RW on Agricultural runoff reduction, the experiences of the Black Sea and Mediterranean Basins. RW on the rehabilitation of the Alexandria coastal zone
4.3.6 Replication			Preparation and	Submission for	Medpartnership

Conference			design	approval to SC	Replication Conference
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ANNEX 3

2011			
4.3 Replication Promotion Activities	Meetings, Workshops, Consultations	Reports, Assessments	Results Achieved
4.3.1 Overall Coordination	Consultation Meetings with Partners: Athens, Marseille, Rome SC Meeting Coordination Meeting 1 st Regional Workshop, TEST Turkey	Preparation of Overall Portfolio Assessment Preparation of Replication Plan for 2011 for SC approval	The General Pan for Replication Promotion Activities defined based on Overall Assessment Start of on the ground implementation
4.3.2 Establishment Demonstration Centers for capacity building and dissemination of lessons learnt			
4.3.3 Publication of Reports on Selected Replicable Practices	Preparation, translation and publication of selected reports		Priority Replicable Practice disseminated
4.3.4 Final Regional Replication Report			
4.3.5 Regional Replication Workshops	Regional Workshop Reduction of Industrial Discharges - TEST experience, Turkey		TEST methodology applied regionally
4.3.6 Replication Conference			