UNITED
NATIONS

EP

UNEP (DEPI)/MED WG.423/5

UNEP

**UNITED NATIONS
ENVIRONMENT PROGRAMME
MEDITERRANEAN ACTION PLAN**

2 October 2015
Original: English

Fifth Steering Committee Meeting and final event of the Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem (MedPartnership) and Integration of climatic variability and change into national strategies to implement the ICZM Protocol in the Mediterranean (ClimVar & ICZM) projects

3-4 November 2015, Athens, Greece

Agenda item 4: Communication Strategy and Dissemination of the Results

Regional Report of the MedPartnership and ClimVar and ICZM projects

Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem
MedPartnership
Together for the Mediterranean Sea
Together for the Mediterranean Sea

Athens, 2015

Foreword

The way we manage and use resources and ecosystems has a definite and obvious impact on the lives and livelihoods of present and future generations. This is a message of high relevance to our work related to pollution prevention and sustainable development in the Mediterranean.

The Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem (*MedPartnership)* and its sister project Integration of Climatic Variability and Change into National Strategies to Implement the ICZM Protocol (*ClimVar & ICZM)* were launched at a key moment for the future of the Mediterranean region, responding to a dire need to enhance efforts to protect environment and preserve resources, to amplify action to revive and boost stagnant economies, and to steadily transition towards a green economy. These projects have proposed a vision for the responsible use of the Mediterranean natural capital by supporting the interaction between development and the environment, promoting the preservation and enhancement of healthy and productive ecosystems that support human dignity through decent livelihoods for the people of the region.

These two projects have achieved exemplary cooperation, partnership and involvement of stakeholders at all levels in the region. As we celebrate this year the 40th anniversary of the Mediterranean Action Plan and Barcelona Convention, we focus on new challenges, building on past experience and lessons learnt. The impact of the ambitious action and good practices taken under the *MedPartnership* and *ClimVar & ICZM* projects will continue beyond their lifespans, and deserve full support to remain sustainable and replicable.

Gaetano Leone
UNEP/MAP Coordinator

Introduction

Assessing the impacts of the MedPartnership and ClimVar & ICZM projects in the Mediterranean region, leads us back to the their initial definition and raison d'être: "a collective effort of leading organizations and countries sharing the Mediterranean Sea, towards the protection of the marine and coastal environment of the Mediterranean".

The main aim of these projects was to effectively contribute to the implementation of the Strategic Action Programme to Address Pollution from Land-Based Activities (SAP/MED), the Strategic Action Programme for the Conservation of Biological Diversity in the Mediterranean Region (SAP/BIO), the Action Plan for the implementation of the ICZM Protocol and the integration of climatic variability and change into national strategies for ICZM.

It is obvious that the MedPartnership and ClimVar & ICZM have met their objectives. They have been an outstanding experience, in the sense that they provided a platform for getting hundreds of persons together including experts, beneficiaries, decision makers, stakeholders, local authorities and international organizations, united "Together for the Mediterranean", contributing towards one ultimate goal: a better and more sustainable marine and coastal environment in the Mediterranean.

The results achieved by the MedPartnership and ClimVar & ICZM projects are not only considerable in terms of quantity but also in terms of quality. With more than 150 activities carried out and 80 demonstration projects implemented, they left long term impacts on the sustainability of the region. They facilitated or organized more than 500 meetings, workshops, and trainings, reaching out to thousands of stakeholders and getting together local actors and regional experts and international institutions.

The projects produced over 300 documents including technical reports, guidelines and policy analysis.

Moreover, the two projects were instrumental for the implementation of ICZM national strategies in countries such as Croatia and Montenegro, where along with Algeria, inter-ministerial committees were created to support the long term sustainability of these processes. They have also supported the update of the National Action Plans (NAPs) in several countries, and allowed the development of a regional climate change adaptation framework to increase the resilience of marine and coastal areas in the Mediterranean to the effects of climate change and variability.

All these results, both in terms of quantity and quality have been essential for the creation of a positive trend and a momentum that add strength and support to the implementation of the Barcelona Convention and its protocols. This gives even more enthusiasm for a future when such projects like the MedPartnership and ClimVar & ICZM should be replicated to ensure that the expression *"Together for the Mediterranean"* goes far beyond being a nice motto but is rather translated into concrete actions.

Lorenzo Paolo Galbiati
MedPartnership and ClimVar & ICZM Projects Manager

Executive Summary
The present report aims to shed light on the main activities carried out under the Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem (MedPartnership) and the Integration of Climatic Variability and Change into National Strategies to Implement the ICZM Protocol in the Mediterranean (ClimVar & ICZM) projects.

Throughout its 6-year of implementation (2009-2015), the MedPartnership project delivered several policy and technical tools and guidance documents aiming at fostering and facilitating policy update and regulatory reforms at regional and national levels. These addressed the implementation of Integrated Coastal Zone Management (ICZM) and Integrated Water Resources Management (IWRM) including coastal aquifer management, in addition to the control of pollution from land-based activities, promotion of sound technology and the proper management of persistent organic pollutants. The project also tackled conservation of coastal and marine biodiversity by developing a Mediterranean Protected Area network and applying the ecosystem based management approach for the sustainable use of fisheries.

Activities carried out under the projects were instrumental for the creation of inter-ministerial committees in countries such as Croatia and Montenegro, and Algeria, to support the long term sustainability of these processes. Moreover the projects have supported the update of the NAPs in several countries, and allowed the development of a regional climate change adaptation framework to increase the resilience of marine and coastal areas in the Mediterranean to the effects of climate change and variability. With the endorsement of MAP focal points, the framework will be submitted for adoption to the 19th meeting of the Contracting Parties to the Barcelona Convention in February 2016.

Capacity building and training activities represented a major component of the projects. The capacity of national institutions was enhanced in the region thanks to a series of training workshops. Information sharing in the region has been reinforced through the development of online platforms with the full set of documentation on coastal aquifers, climate change, and Marine Protected Areas (MPAs). Moreover, a number of activities were carried out within the framework of the MedPartnership to keep NGOs, CBOs and other stakeholders abreast of the project's progress by disseminating information, but also to engage them in its activities. Moreover, a number of new techniques and tools were developed to help countries carry out their activities and facilitate communication between scientists and decision-makers.
The MedPartnership and ClimVar & ICZM together have implemented more than 150 activities and 80 demonstration projects. The results achieved by the projects are not only considerable in terms of quantity, but have had a long term impact on the sustainability of the region.
They contributed in saving over 10 million cubic meters of water yearly in several industrial sectors, establishing 5 new MPAs, producing new maps of coastal aquifers, and made possible the proper disposal of over 900 tons of PCBs in 3 different countries. Together they supported the organization of more than 500 meetings, workshops, and trainings which have reached out to thousands of stakeholders and provided a platform for local actors, regional experts and international institutions to interact.
Moreover, the projects' activities produced over 300 documents including technical reports, guidelines and policy analyses. These were sorted in a detailed bibliography that is available online.

What is the MedPartnership?

The Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem (MedPartnership) is a collective effort of leading environmental institutions and organizations together with countries sharing the Mediterranean Sea to address the main environmental challenges that Mediterranean marine and coastal ecosystems face.

The MedPartnership focuses on priority actions identified by the signatory countries to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean (Barcelona Convention) in two Strategic Action Programmes (SAPs). These respectively aim to

- reduce land-based sources of marine pollution (SAP-MED)
- protect biodiversity, living resources and their habitats (SAP-BIO)

The project's overarching goal was to reverse the degradation trends affecting the unique Mediterranean Large Marine Ecosystem, including its coastal habitats and biodiversity.

The MedPartnership catalyzed action to create an enabling environment for the necessary policy, legal and institutional reforms in the partner countries, as well as investments, with the aim to:

- improve environmental conditions of pollution and biodiversity hotspots and other priority areas under stress;
- promote the sustainable use of marine and coastal resources through integrated approaches;
- reduce pollution from land-based sources;
- enhance the protection of 'critical' habitats and species;
- integrate climate considerations into national marine and coastal planning.

The MedPartnership's 77 demonstration projects and the promotion and replication of good practices maximized impact to ensure the sustainability of the project beyond its lifespan.

The project was built around 4 main components:

Component 1 - Integrated Approaches for the Implementation of the SAPs and NAPs: ICZM, IWRM and Management of Coastal Aquifers

This component aimed at promoting integrated approaches throughout the Mediterranean for the reduction of pollution and the preservation of biodiversity. This has been achieved through promoting appropriate management of the coastal and marine environments, including aquifers. Integrated Coastal Zone Management (ICZM) and Integrated Water Resources Management (IWRM) were the overarching policy frameworks for all activities within this component. This component focused on national and regional policy, legislation and institutional reforms taking fully into account the ICZM Protocol, ratified in March 2011.

Under this component, eleven demonstration projects at selected sites were implemented in Albania, Algeria, Croatia, Lebanon, Montenegro, Morocco, and Tunisia.

Component 2-. Pollution from Land-Based Activities, including Persistent Organic Pollutants: Implementation of SAP MED and related NAPS

This component addressed some of the priorities identified in the Strategic Action Plan (SAP-MED) and its National Action Plans (NAP) for the reduction of pollution from land-based sources. This has been done through facilitation of policy and legislation reforms for pollution control, transfer of Environmentally Sound Technology (TEST), and environmentally sound management of equipment, stocks and wastes containing, or contaminated by, PCBs in national electricity companies.

Under this component, fifty one demonstration projects were implemented in Albania, Algeria, Bosnia and Herzegovina, Egypt, Morocco, Syria, Tunisia and Turkey.

Component 3 - Conservation of Biological Diversity: Implementation of SAP-BIO and related NAPs

This component contributed to the implementation of the conservation of biological diversity (SAP-BIO) in the Mediterranean region, specifically through two areas of focus: conservation of coastal and marine diversity through the development of a Mediterranean MPA network and promotion of the sustainable use of fisheries resources through the application of the ecosystem approach to fisheries.

Under this component, fifteen demonstration projects at selected sites were implemented in Albania, Algeria, Croatia, Libya, Montenegro, Morocco, Tunisia and Turkey.

Component 4 - Project Coordination, NGO Involvement, Replication and Communication Strategies, Management and Monitoring and Evaluation (M&E)

The MedPartnership, was led by UNEP/MAP and ten executing partners, working in twelve participating countries. Under this component, a Project Management Unit (PMU) of 5 persons ensured good coordination of the activities. In the Mediterranean, many international and regional organizations are working in parallel for the protection of the coastal and marine environment. This component included activities aiming at facilitating non-governmental organizations (NGOs) and community-based organizations (CBOs) participation in the project activities and enhancing their role, as well as building synergies with other projects. It also included a communication and dissemination aspect.

Donors and Partners

With a total budget of 48 million USD, the MedPartnership was led by UNEP/MAP and financially supported by the Global Environment Facility (GEF) - with a contribution of 13 million USD - and other donors, including the European Commission and all participating countries, with a contribution of 35 million USD. In addition to the participating countries, cash and in kind co-financing was secured namely from the Government of Italy (Ministry for the Environment, Land and Sea, and the Ministry of Foreign Affairs), and donors, which include the European Commission (EC), the Spanish Agency for International Cooperation (AECID), the Mediterranean Trust Fund (MTF) of the Barcelona Convention and its protocols, the French Global Environment Facility (FGEF)/Fonds Français pour l'Environnement Mondial (FFEM) and the MAVA Foundation for Nature.

The executing partners of the project were: FAO, UNESCO/IHP, UNIDO, GWP-Med, MIO-ECSDE, WWF MedPO, UNEP/MAP's MEDPOL programme and regional activity centres (CP/RAC, SPA/RAC and PAP/RAC).

Partner countries: Albania, Algeria, Bosnia and Herzegovina, Croatia, Egypt, Lebanon, Libya, Morocco, Montenegro, Palestine, Syria, Tunisia and Turkey.

What is the ClimVar & ICZM project?

The "Integration of Climatic Variability and Change into National Strategies to Implement the ICZM Protocol in the Mediterranean" project ("**ClimVar & ICZM**") is a collective effort of 11 countries sharing the Mediterranean, to promote the use of Integrated Coastal Zone Management (ICZM) as an effective tool to deal with the impacts of climate variability and change in coastal zones, by mainstreaming them into the Integrated Coastal Zone Management process.

Background

The Mediterranean region has long been identified as a climate change hotspot that "will suffer multiple stresses and systemic failures due to climate change". When the MedPartnership was being developed between 2006 and 2007, the issue of climate change-related risks and impacts to the marine and coastal zones was not fully integrated into its activities. However, it has since been increasingly necessary for Mediterranean countries to enhance their understanding of climate change and its threats, as well as their capacity to respond to such threats. This led to an agreement that a new, "sister" project to the MedPartnership be developed, which would focus on the integration of climate variability perspectives into ICZM planning. Following a preparation phase for the development of a full project document, the GEF endorsed the project in January 2012.

Objectives

The objectives of the project are:

- To strengthen the understanding of the risks that climate variability and change pose to the region's marine and coastal areas, as well as of available response options.
- To strengthen partnerships, improve capacity building and establish mechanisms for the exchange of data and information for integration of climate variability and change into concrete ICZM policies, plans and programmes.

The project was composed of the following four components and their respective activities:

1. Establishment of a climate variability and change information sharing platform
    - assessment of regional and national programs for monitoring and tracking climate variability and change in the Mediterranean Marine and Coastal areas.
    - regional consensus on options for sharing data on climate variability and change
    - development of an online multi-country Information Sharing Platform on climate variability and change in coastal areas
2. Strengthening the knowledge base on regional climate variability
    - development of an integrated methodology to identify "climate hot-spots" along the Mediterranean coastline and implementation of a Multi-Scale Coastal Risk Index in the Mediterranean and at the local scale in the case study of Tetouan, Morocco.
    - implementation of models and tools to assess environmental and socioeconomic impacts and evaluate response options in two coastal areas in Sibenik-Knin in Croatia and Kerkennah Islands in Tunisia
3. Capacity building and integration of the climate dimension into ICZM planning
    - development of a methodology and tools for mainstreaming climate variability and change considerations into national ICZM planning and practices
    - development of an Integrated Management Plan in the Sibenik-Knin coast in Croatia and integration of climate change dimensions in National ICZM Strategies in Algeria and Montenegro.
    - contribution to building capacity and advancing policy dialogue in participating countries on climate variability and change with emphasis on ICZM and IWRM issues

- o regional assessment of climate change adaptation in the Mediterranean coastal zones and integration into policies and plans.

4. Project management and coordination
   - o smooth and timely implementation of the planned project activities.
   - o strong platforms for exchange of project experiences with the larger International Waters community.

Donors and Partners

With a total budget of 9.2 million USD, the ClimVar & ICZM project is led by UNEP/MAP and is financially supported by the Global Environment Facility (GEF) - with a contribution of 2.2 million USD - and other donors, including the European Commission and all participating countries with a contribution of 7 million USD.

Partner countries: Albania, Algeria, Bosnia and Herzegovina, Croatia, Egypt, Libya, Morocco, Montenegro, Palestine, Syria and Tunisia.
Executing partners of the project: PAP/RAC, Plan Bleu/RAC, GWP-Med, UNEP-Grid Geneva, and the University of Geneva.

Regional results and achievements

Although the projects were built around specific components, the present report is structured around regional and national activities carried out under both projects. The first part presents results and achievements at the regional level involving more than one country. These are sorted by: Institutional, policy and legislative reforms and plans; capacity building and training; and new tools and guidelines. The second part lists in details demonstration activities undertaken under the two projects by countries.

Institutional, policy and legislative reforms and plans

The project delivered several policy and technical tools and guidance documents aiming at fostering and facilitating policy update and regulatory reforms at regional and national levels. These addressed implementation of Integrated Coastal Zone Management (ICZM) and Integrated Water Resources Management (IWRM) including coastal aquifer management, in addition to the control of pollution from land-based activities, promoting sound technology and the proper management of persistent organic pollutants. The project also tackled conservation of coastal and marine biodiversity by developing a Mediterranean Protected Area network and applying the ecosystem based management approach for the sustainable use of fisheries.

Coastal aquifers analysis in the Mediterranean

Human populations in the Mediterranean depend on high quality groundwater resources for drinking water, irrigation, tourism and other activities. Coastal aquifers and groundwater play a key role in protecting the environment, in maintaining biodiversity and ecosystem services and the overall health of the Mediterranean Large Marine Ecosystem. Groundwater in the region is subject to increasing risks of pollution and over extraction since this important – but invisible – resource is not fully considered in decisions related to natural resource management and land use.

To establish a baseline on coastal aquifers and groundwater in the Mediterranean and determine priority intervention measures, UNESCO-IHP undertook a series of assessments at the regional level: (1) the legal, policy and institutional frameworks in place for the management of coastal aquifers; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers in the region; and (3) the state of coastal groundwater related ecosystems and the associated ecosystems services supported by groundwater.

Complemented by case studies, these assessments demonstrated the importance of the use of innovative tools for groundwater management (aquifer vulnerability mapping, the use of hydrogeochemistry to identify sources of groundwater pollution, amongst others) as well as the consideration of groundwater in Integrated Coastal Zone Management and Natural Resources Management plans.

The results of these activities have allowed for clear links to be drawn between coastal aquifers and groundwater and the transboundary environmental issues of concern identified in the 2005 TDA-MED, and have provided a sound scientific basis for the development of a regional action plan for coastal aquifers in view of reversing the trends of overextraction and quality degradation in the coastal aquifers and groundwater in the region.

Legal and institutional framework for coastal aquifers and groundwater management in the Mediterranean

The analysis of the legal and institutional framework for coastal aquifers and groundwater management in the Mediterranean carried out by UNESCO-IHP under the MedPartnership

project, revealed the limited coverage of groundwater in most of the national policies and legal frameworks of the participating countries. It was recommended that any new water legislation needs to systematically consider protection and management of coastal aquifers, and introduce provisions related to limits on pollution levels in discharge of solid and liquid waste. Furthermore, any legislation/policy related to the integrated management of the coastal zone should integrate the management of coastal water resources, and pay special attention to coastal aquifers, whilst reasonable and equitable water tariffs should be introduced. Meanwhile, plans should be made to raise awareness and improve the capacities of decision makers about the importance of coastal aquifers as a water resource in the coastal zone, and about their specificities due to their interaction with the sea.
With respect to defined responsibilities for groundwater management, general overlaps and gaps of duties between ministries in charge of water resources were also noticed. A high-level water board including all ministries directly or indirectly involved in water management, could be established to coordinate actions and agree upon water policies and legislation. Another clear recommendation was to establish specific entities for coastal aquifers within the existing institutions in charge of groundwater. Public-private partnerships and stakeholder engagement in the Water Sector are to be encouraged.

Moreover, countries are encouraged to deposit their instruments of ratification to the ICZM Protocol, being the one dealing the most with water resources in the coastal zone mentioning coastal aquifers as such and specifying a monitoring requirement for the Parties. They were also urged to uptake the Integrative Methodological Framework (prepared in the frame of the MedPartnership project by GWP-Med, PAP/RAC and UNESCO-IHP) and its consideration of coastal aquifers in the establishment of management plans and to create a platform for the exchange of knowledge and technologies between countries in the region adapted for coastal aquifers.

Hydrogeological assessment
Coastal aquifers are a major water resource along the Mediterranean coastline, while at the same time, submarine groundwater discharges to the sea are significant, and in some places superior to surface water inflows. Hence, coastal aquifers contribute to, and sustain, shallow marine ecosystems. Coastal wetlands, lagoons, humid zones and coastal habitats, providing valuable services and contributing to coastal livelihoods, are all in part or totally dependent on groundwater regimes.
The regional picture that emerges from the hydrogeological assessment carried out by UNESCO-IHP, of the current state of these critically important resources is one of generalized neglect and progressive degradation. The key findings indicate that (1) coastal groundwater degradation is contributing to exacerbating issues of transboundary concern at the large marine ecosystem level, such as nutrient pollution, habitat and coastal freshwater dependent ecosystems degradation; (2) there is a regionally preponderant medium to high level of contamination from nutrients, other hazardous substances and salinization, the latter being often attributed to seawater intrusion. These conditions have been confirmed by expert opinions and the existing quantitative data; (3) scientific knowledge and public awareness on coastal aquifers is scanty or non-existent in most countries. Monitoring is occasional at best, lacks modern technologies and strategic, multi-purpose design; (4) consequently, management frameworks for coastal groundwater are absent, and these resources are not formally recognized as critical for the sustainability of coastal development, nor as being highly vulnerable; (5) unregulated exploitation is common, and no quality-quantity safeguards exist or are applied. Conflicts among uses (agriculture, domestic, tourism, environment, energy…) are common and potentially disruptive.

Assessment of coastal wetlands dependent on groundwater
Under the MedPartnership project, twenty-six representative Mediterranean coastal wetlands were inventoried and evaluated by UNESCO–IHP with respect to their ecosystem services, status and trends. These wetlands were reported as having their functionality altered in different degrees, with groundwater playing a dominant role in a small number of wetlands and a shared role in most of them.
The assessment shows that most of the services evaluated are performing at a low level in the whole set of wetlands inventoried, and that the major part of the evaluated services are not changing their level of performance in nearly all the wetlands inventoried. The number of drivers reported as having some degree of impact, is very modest.

While it appears that there is abundant scientific and technical information about all the wetlands inventoried, it seems clear that there is lack of adequate understanding and knowledge about ecosystem services and their evolution trends, and on the strong relationships existing between groundwater flows, wetlands services, and human wellbeing.

Following the regional assessments and case studies, UNESCO-IHP has focused on building consensus among the countries on the main challenges related to coastal aquifers in the region. As a first step, regional consultations with the participating countries were organized to verify the key findings of the regional assessments, addressing the specific themes of the current state of coastal aquifers, including their main uses, pressure drivers and pollution concerns; and the legal, policy and institutional framework for the management of groundwater. The results of the regional consultations enabled UNESCO-IHP to establish the main issues of concern and propose measures to respond to these concerns, which were debated among countries through a series of national and sub-regional consultations. From these exchanges, a regional action plan was developed and acquired the endorsement of the majority of the participating countries.

Harmonizing national institutional and legal arrangements with the ICZM Protocol
The UNEP/MAP Priority Action Programme Regional Activity Centre (PAP/RAC) implemented several activities to support the ratification and implementation of the ICZM Protocol for the Mediterranean. These were aiming at harmonizing national institutional and legal arrangements with the ICZM Protocol. Two existing studies of the Proto-GIZC project were upgraded: “A contribution to the interpretation of legal aspects of the ICZM Protocol” and “Analysis of the Croatian legal framework in relation to the provisions of the ICZM Protocol”. In addition, two more studies “Assessment of Impacts of the Ratification of the ICZM Protocol on Croatian legislation, with a focus on Article 8” and “ICZM Protocol and spatial planning, with special reference to Croatia” were carried out.
At the launching of this activity, PAP/RAC invited partners dealing with the integrative approaches to go further and to jointly produce a document which provides guidance to the policy makers of all Mediterranean countries to better integrate coastal, river basin and aquifer management. The “Integrative Methodological Framework” (IMF) was jointly drafted, tested during the project implementation and finalized by the completion of the MedPartnership. IMF aspires to be one of the key resource and reference documents contributing to the global ongoing discussion and efforts for the integration of management domains and governance structures related to water resources, coastal zone and marine areas. Thus, IMF could be considered as the Mediterranean contribution towards the new “source to sea” or “ridge to reef” global management paradigm.

Support activities in preparation of national ICZM Strategies
In support of the preparation of national ICZM Strategies, PAP/RAC carried out several activities, consisting in analyzing relevant national strategies the experience of which could be

useful for national ICZM Strategies in the Mediterranean. Based on this analysis, the Guidelines for the preparation of national ICZM strategies, were drafted and used for the strategies in Algeria and Montenegro, as well as for the replication project Marine and Coastal Strategy in Croatia. Besides the integration of analytical findings, harmonization of the objectives, indicators, measures and monitoring process related to various sectors, national ICZM strategies are important as they propose the optimal institutional framework for sustainable management of marine and coastal resources. The process of their preparation is highly participatory, through the inter-ministerial committees at the national level and the participatory workshops at sub-national level, to ensure that the local needs and priorities, as well as knowledge and ideas, are taken into consideration, and also to build ownership and increase the chances for their successful implementation. For the development of the Guidelines, synergy was created with other EU funded projects such as the Shape IPA Adriatic project.

In the same vein, synergy was also built among MAP CAMP Montenegro and the MedPartnership funded national ICZM Strategy of Montenegro, which enabled the strategy to gain strong political support and commitment, by integrating its main findings into other important policy documents, such as the Coastal Area Spatial Plan.

The integration of the two processes enabled PAP/RAC to secure some savings, and use them to fund the Economic and Social Analysis (ESA) of the use and cost of degradation of the Croatian marine environment and coastal zone. This study was the first step in producing a national strategy for the management of the marine environment and coastal zone, which was later on proposed for replication to the “Mediterranean Environmental Replication Strategy - MEReS”.

Application of the ICZM approach, tools and techniques in demonstration areas
Application of the ICZM approach, tools and techniques was tested in two areas through the preparation of two Plans: the Transboundary Integrated Resource Management Plan for the Buna/Bojana Area (Montenegro/Albania) and the Coastal Plan in Reghaia (Algeria). The first plan is the practical application of the IMF, whilst bringing together administrative structures from the two states. The plan considers impacts on the coastal (including marine) zone and the river basin. It resulted in measures for strengthening cooperation for restoration and safeguarding of the area’s ecosystems and the services that they provide, increasing resilience to climate change, as well as supporting the creation of jobs and social welfare. The establishment of a transboundary governance mechanism to ensure that relevant issues of transboundary importance are considered and acted upon bilaterally was among the key measures. The plan resulted in requesting the drafting of a Framework Agreement for the Sustainable Management of Skadar/Shkoder Lake Basin and Buna/Bojana Area. The draft legal document prepared by GWP-Med and PAP/RAC with contribution from the Centre for Water Law, Policy and Science of the University of Dundee incorporated relevant best international experience and practice. It provided the basis for official consultations between the two countries for action at the transboundary level. This is one of the few examples of a legal agreement for the management of shared resources, taking into consideration the continuum of systems found in nature, following the “source to sea” or “ridge to reef” paradigm, integrating management of river basins, coastal and marine areas.

Promoting Integrated Water Resources Management (IWRM) in the Mediterranean
A common regional framework for IWRM is missing in the Mediterranean. Under the MedPartnership project, GWP-Med endeavored to promote Integrated Water Resources Management (IWRM) in the Mediterranean as a tool towards sustainable development,

including the reduction of pollution and the preservation of biodiversity, with emphasis on the coastal zone and marine environments.
Activities focused on assisting with the elaboration of common IWRM policies through regional and sub-regional political and technical processes, catalyzing reforms through national policy dialogue on water governance and financing aspects and assisting with the preparation of water supply and sanitation strategies nationally, and promoting integrated IWRM/ICZM policies and management planning at transboundary level.
Activities were materialized in close and operational synergy with key political processes in the region, including the Union for the Mediterranean (UfM), the Mediterranean Component of the EU Water Initiative (MED EUWI), the Horizon 2020 Initiative to de-pollute the Mediterranean, the Petersburg / Athens Declaration Process on Transboundary Water Resources Management in Southeastern Europe, the EU Programme 'Sustainable Water Integrated Management' (SWIM), the GWP-Med/OECD/UfM Programme 'Governance and Financing for the Mediterranean Water Sector' and other partners.
Throughout the project, more than 110 meetings, workshops and conferences addressing IWRM issues in the Mediterranean were conducted at regional, sub-regional and country levels.

Strategy for Water in the Mediterranean
GWP-Med supported the preparation of the 'Strategy for Water in the Mediterranean' (SWM) through synergy with MED EUWI and the EU. The adoption of the SWM, which was mandated by the Euro-Mediterranean Ministerial Conference on Water (December 2008, Dead Sea, Jordan) is still pending due to disagreement among parties. Nevertheless, the draft SWM has had impact on the development of IWRM approaches in the Mediterranean.

Shared Vision for the Management of the extended Drin River Basin
Riparian countries sharing the Drin river basin in the Western Balkans recognized the added value of IWRM and expressed a strong wish to collaborate towards meeting common objectives for sustainable development and the protection of the environment. Assessments and multi-level consultations led officials and stakeholders at national and sub-regional level to agree on a 'Shared Vision for the Management of the extended Drin River basin' that formed the basis of the 'Drin Memorandum of Understanding' that was signed among riparian countries at ministerial level in 2011. An 'Action Plan for enhancing cooperation for the management of the Drin basin' was endorsed in 2012. Specific steps for its implementation, including the preparation of an integrated river basin management plan, were outlined. The Buna/Bojana river basin and coastal area is the most downstream - adjacent to the Adriatic - part of the extended Drin basin. Furthermore, the Drin Core Group was established as a cross-basin body to follow up the process and GWP-Med was appointed as its Secretariat.

Engaging the private sector
The MedPartnership played a catalytic role in the development, launching and implementation of the 'Governance and Financing for the Mediterranean Water Sector' Programme. It focuses on the challenges and opportunities for engaging the private sector in the sustainable financing of water supply and sanitation. Assistance for meeting environmental objectives is part of the Programme's focus. Activities including assessment, dialogue and reforms' prioritization are implemented at regional level, and until the end of 2015 in Egypt, Jordan, Lebanon, Palestine and Tunisia. Activities are co-supported by Sweden and the EIB FEMIP Trust Fund.

Midterm evaluation of SAP MED and NAPs implementation
The evaluation of the implementation of the Strategic Action Plan (SAP MED, adopted in 1997) as a long term policy framework to combat pollution from land-based sources in the

Mediterranean, as well as of the National Action Plans (NAPs) prepared in 2004/2005 was completed early in 2014.
The evaluation report on SAP/NAP implementation acknowledged the big effort made to set a complete and comprehensive policy and regulatory framework by almost all countries. It identified some gaps and stressed that pressures from land based sources and activities remained high and that further concerted efforts were needed to reduce marine pollution in the Mediterranean. Meanwhile, pollution related reporting capacities of the countries had increased over time. Lack of data was identified as an important constraint to the assessment. With regards to the NAP investment portfolio, an analysis conducted by the Union for the Mediterranean (UfM) showed that funding was secured for 83% of waste water and for 40% of solid waste projects during the first 7 years of implementing the NAPs. However, delays in the NAP projects becoming operational were recorded even in cases when the investment funding was secured, due to lack of operation and maintenance funding or for other reasons (e.g. lack of collection systems or political opposition). Implementation of all the assessed projects would substantially contribute to elimination of the identified hot spots by the year 2025. Key recommendations include the need to ensure project sustainability through, amongst others, cost recovery and better use of economic instruments, as well as the need to move to more sustainable consumption and production patterns, improve monitoring and enforcement systems, and others.

The evaluation report acknowledged the SAP MED relevance including its final pollution reduction targets and recommended to strengthen its implementation, develop indicators to facilitate and improve reporting and prepare the grounds for its future update with the view to identify the required measures for achieving Good Environmental Status (GES) in the Mediterranean including addressing sources up stream at driver level to promote pollution prevention policies. The report strongly recommended the update of the NAPs endorsed by COP 15 in 2005 taking into account the SAP MED 2025 targets, the application of the ecosystem approach as well as the implementation of Regional Plans adopted by the Contracting Parties in the framework of Article 15 of the LBS Protocol of the Barcelona Convention.
The NAP update process was launched in Albania, Bosnia Herzegovina, Montenegro, Turkey, Egypt, Lebanon, Morocco and Tunisia. In addition to support directly provided by the EU funded SWIM Project in the framework of the Horizon 2020 Initiative to de-pollute the Mediterranean, a number of national NAP experts were recruited in Albania, Bosnia and Herzegovina, Libya, Montenegro and Turkey. Furthermore, support was provided to Egypt, Lebanon, Morocco and Tunisia to ensure a consultative and participatory NAP update process with involvement of all relevant stakeholders and partners.

As a result, by 2015 national institutional structures and NAP update teams were established in almost all the countries. National workshops/ meetings to launch the NAP process were. The countries had to assess the midterm baseline, identify the gaps that need to be addressed through the updated NAPs, and set operational targets. Regional experts assisted the countries in this. The updated NAPs are expected to be delivered by December 2015.

Monitoring and updating the Strategic Action Programme for the Conservation of Biological Diversity (SAP BIO)
Since the adoption of the Strategic Action Programme for the Conservation of Biological Diversity in the Mediterranean Region (SAP BIO) in 2003, SPA/RAC has been continuously adapting this programme and its related activities to current conservation reality and state of progress in the Mediterranean riparian countries. Within the framework of the project, three

SAP BIO national correspondents meetings and two SAP BIO advisory committee meetings were organized.
These meetings, that brought together 21 Contracting Parties to the Barcelona Convention and 19 regional organizations, allowed for discussion and updating of SAP BIO to go along with the CBD Strategic Plan for Biodiversity 2011-2020 and Aichi targets for 2020, and reviewing the development of on-going and new regional projects regarding the implementation of SAP BIO regional priorities.

Roadmap to achieve Aichi Target 11 in the Mediterranean
SPA/RAC prepared a draft roadmap to achieve Aichi Target 11 in the Mediterranean region. The first draft was drawn up at a meeting of experts and regional stakeholders held in Tunis, Tunisia (27-28 April 2015) with the support of the MedPartnership project, and was subsequently reviewed and commented by SPA/RAC Focal Points, during their 12th ordinary meeting (Athens, Greece, 25-29 May 2015).
The draft roadmap is proposed for adoption at COP 19 in February 2016 to serve as guidance for all Mediterranean countries to strengthen marine environment conservation and management.

Legislation and procedures for the Ecosystem Approach to Fisheries (EAF)- A study of fisheries legislation and regulations in four Mediterranean countries
An in-depth review of the legal and administration systems of fisheries management in Croatia, Montenegro, Tunisia and Turkey in their relation with the EAF principles and requirements was carried out by FAO. Fishery managers in these countries have acquired a better perception and knowledge of what changes might be needed to their fishery management system to move towards an EAF-type system.

Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas
Under the ClimVar & ICZM project, UNEP/MAP prepared the draft Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas. The preparation of this document was envisaged in UNEP/MAP's Programme of Work 2014–2015 adopted at COP18 in 2013 in Istanbul. The framework was developed in a step-by-step consultation and review process mainly through an ad hoc Advisory Panel involving key regional experts on climate adaptation. A review was made of all relevant regional adaptation strategies, as well as of major publications from international institutions and initiatives. Coordination and alignment with the climate related chapter of the Mediterranean Strategy for Sustainable Development (MSSD 2.0) was ensured throughout the process.

Guided by the vision to increase the resilience of the marine and coastal areas of the Mediterranean countries and their communities to the adverse impacts of climate variability and change in the context of sustainable development, the framework is structured around four strategic objectives, each of them identifying several operational objectives with relevant priority fields where action should be taken.

The strategic objectives aim to provide a regional approach in coordinating and assisting policy makers and stakeholders at all levels across the Mediterranean to:

- promote the right enabling environment for mainstreaming adaptation in national and local planning;
- promote and exchange best practices and low-regret measures;
- promote leveraging of necessary funding; and
- exchange and access best available data, knowledge, assessments and tools on adaptation

With the endorsement of the MAP Focal Points, the Framework will be submitted for adoption to the 19th meeting of the Contracting Parties to the Barcelona Convention in February 2016.

Coastal Plan for Šibenik-Knin County in Croatia
A Coastal Plan with a specific focus on climate variability and change was prepared by PAP/RAC for the Šibenik-Knin County of Croatia. The Coastal Plan, as foreseen by the ICZM Protocol, recommends ways to increase the resilience of the coastal zone and sustainability of its development. It addresses the planning process as proposed by PAP/RAC's guidelines and was developed by a multi-disciplinary team of experts, supported by the local knowledge structured around "Climagine" participatory workshops that paralleled the Plan preparation. The Plan generated significant interest by stakeholders around the Mediterranean. During its preparation, it was presented at many national and international conferences and workshops and it is included in the European Climate Adaptation Platform. The need for a systematic approach to increase coastal resilience is recognized by many coastal regions. Therefore, this plan provides an example of how this complex issue can be tackled.

Capacity building and training

Capacity building and training activities represented a major component of the project. The capacity of national institutions was enhanced in the region thanks to a series of training workshops. Information sharing in the region has been reinforced through the development of online platforms with the full set of documentation on coastal aquifers, climate change, and MPAs. Moreover, a number of activities were carried out within the framework of the MedPartnership to keep NGOs, CBOs and other stakeholders abreast of the project's progress.

Regional workshop on aquifer vulnerability mapping and spatial applications to groundwater management
Recognizing the need to promote the use of science-based tools for the sustainable management of groundwater resources, UNESCO-IHP organized a five-day capacity building workshop in February 2015 to provide participants from nine MedPartnership countries with hands-on training modules devoted to aquifer vulnerability mapping and spatial applications to groundwater management. The module on aquifer vulnerability mapping focused primarily on two standard methods for evaluating the vulnerability of aquifers to land-based pollution (COP and SINTACS) as well as a new method developed under the MedPartnership that also considers vulnerability to seawater intrusion. The module on spatial applications to groundwater management was led by the European Space Agency (ESA) and featured selected elements of ESA's successful TIGER capacity building initiative with complementary groundwater sessions provided by UNESCO-IHP.

Capacity building for national ICZM
Regional assessments, analyses and guidelines were used for capacity building and training. Three regional workshops were organized by PAP/RAC for the participants of all GEF eligible countries.
The first regional workshop aimed at analyzing relevant national strategies as well as at presenting and finalizing the draft guidelines for preparation of national ICZM strategies required by the ICZM Protocol. The second regional workshop addressed harmonizing national legal and institutional frameworks with the ICZM Protocol. The third regional workshop aimed to present all PAP/RAC MedPartnership and ClimVar and ICZM activities to the MedPartnership and PAP/RAC national focal points. To enhance the sustainability of meetings and make them more environmentally friendly and green, special websites were created for some meetings, with the aim to raise the awareness of the participants on the

carbon and environmental footprint of PAP/RAC meetings and encourage them to take concrete actions to make changes.

Ecological monitoring of marine protected areas practical training programme
SPA/RAC organized a Mediterranean training session on the "Identification and classification techniques of marine and coastal species for the ecological monitoring of marine protected areas". This training course contributed to strengthen the skills of 8 MPA managers and practitioners from 7 Mediterranean countries.
As a follow-up to the successful 2011 regional training workshop, in collaboration with the Marine Research Centre of Santa Pola (CIMAR, University of Alicante, Spain) and the Marine Reserve of Nueva Tabarca (Spain), SPA/RAC organized respectively in September, 2012, 2013 and 2014, three other regional workshops on "Ecological monitoring in MPAs", that targeted around 40 MPA managers and practitioners, and marine researchers from 10 Mediterranean countries.

Furthermore, SPA/RAC and WWF-MedPO have technically and financially collaborated to organize three regional training workshops on "MPA Management Planning", "Planning for Sustainable Fisheries in MPAs" and "Sustainable Tourism Planning in MPAs". SPA/RAC has also collaborated with MedPAN in organizing a training workshop on "Climate change and Mediterranean MPAs".

Capacity building programme for MPA practitioners
At the very outset of the MedPartnership, an assessment was conducted to identify priority capacity building needs of MPA practitioners in the 11 project countries. Based on the results, an innovative capacity building programme was designed through a participatory planning workshop held in Barcelona (Spain) in April 2009. The National Marine Sanctuary International Program of the US National Oceanographic and Atmospheric Administration (NOAA) supported WWF-MedPO in the design, planning and implementation of the programme. In 2012, the programme was unanimously recognized as the key mechanism in the region to deliver knowledge and skills to MPA practitioners and put them into practice. It has contributed to building the capacity of more than 300 MPA practitioners from 11 countries of the South and East of the Mediterranean. The main subjects included MPA design and management, planning for sustainable fisheries and tourism in MPAs, communications for MPA managers, and MPA business planning.
The programme included three regional interactive training workshops involving participants from the 11 project countries through case studies and lessons learned, presentations, working groups and problem-solving exercises. All training activities were organized in collaboration with SPA/RAC and with the technical support of NOAA.

Supporting MPA management
Other training activities were designed and implemented to support the demonstration project actions and to address specific management shortfalls at site level. Each training workshop included 30 practitioners (including MPA staff, representatives of relevant government authorities and administrations for MPAs, tourism and fisheries, NGOs/CSOs and the tourism and fisheries sectors) that have developed the knowledge, capacities and tools to implement and complete a sustainable tourism management (or an MPA management) planning process; During the regional training workshops, participants were asked to identify areas of interest and develop specific projects that they intended to implement in their MPA or institution over the 10-12 months following the training. These projects were then included in a contract – an Implementation Agreement – with WWF-MedPO (or SPA/RAC for a number of cases). Through these contracts, participants committed to implement the agreed activities, while WWF and SPA/RAC committed to provide the necessary technical assistance for them to

achieve the agreed objectives. Through the Implementation Agreements, more than 100 people (MPA managers and key stakeholders - mainly fishermen and diving clubs) learnt from first-hand experience and best practices in more developed MPAs through a system of exchanges, South-North and South-South.
Moreover, exchange visits were carried out during the project to provide post-training experiences and opportunities to share good practices, contributing to a continuum in the learning experience, raising awareness on MPAs across the region, and enhancing the support of local decision-makers to MPAs.

Mentor programme for training of trainers in MPA management
In early 2009, WWF-MedPO officially launched a Mentor Programme as a "training of trainers" programme for 12 officials appointed by relevant authorities from the 11 project countries. This was the first attempt to create a professional network of trainers in the region and to ensure the sustainability of the capacity building programme beyond the duration of the project. Through a series of targeted training workshops, mentors acquired the necessary knowledge on MPA management and built effective facilitation and communication skills. Mentors proved crucial in mobilizing national and local decision-makers, tailoring the community-based activities to local needs and facilitating the implementation of the capacity building programme within their countries.

Supporting the network of MPA managers in the Mediterranean (MedPAN)
SPA/RAC also provided support to MedPAN in organizing its annual experience-exchange workshops intended for Mediterranean MPA managers that evolved around:
- "How to support the development of alternative livelihoods and/or income-generating activities in the Mediterranean MPAs"
- "Environmental education and awareness-raising in Mediterranean MPAs"
"Surveillance and enforcement of regulations in MPAs: how to maximize the efficiency and sustainability of actions"
- "Monitoring for managing Mediterranean Marine Protected Areas".
This experience-sharing workshop gathered 150 participants from 14 Mediterranean countries and was an opportunity to support managers to better identify and implement monitoring in line with the objectives of their MPAs and to promote specific protocols to harmonize data collection throughout the regional MPA system.

Capacity Building strategy for enhancing MPA management in the Mediterranean
In 2011 WWF-MedPO, MedPAN and SPA/RAC, in coordination with other regional and national partners, developed a long-term Capacity Building strategy for enhancing MPA management in the Mediterranean based on the feedback of 63 respondents from 15 countries. A parallel project launched by SPA/RAC, MedPAN and WWF assessed management tools needs for MPAs, evaluating existing tools and creating a strategy for the development of future management tools. Both documents serve as a reference for the development of future capacity building activities and management tools for MPA practitioners in the region.

Country-specific trainings
In response to specific requests from countries benefiting from the Mediterranean MPA network project MedMPAnet being implemented under the MedPartnership project, several trainings were organized at national level.

Thus, SPA/RAC and WWF-MedPO provided training to 22 Libyan MPA officials and stakeholders on: (i) Planning socio-economic assessments in MPAs[1], (ii) GIS application to marine environment[2], and (iii) Participatory process and stakeholders' engagement in MPAs[3].

SPA/RAC supported the Tunisian APAL and INSTM in running the marine turtles nesting sites monitoring campaigns in Kuriat Islands (Tunisia) during July-August 2013 and 2014. These monitoring campaigns allowed providing training to a number of Tunisian (9 participants in 2013 and 14 participants in 2014) and non-Tunisian (1 participant from France in 2013) young scientists on turtle nesting monitoring techniques. In the same line, SPA/RAC provided assistance to APAL for setting-up an ecological monitoring system of fish populations in the Kuriat Islands MPA.

On-job trainings in planning MPAs
In addition to these trainings, and taking advantage of all the field ecological surveys undertaken in Lebanon, Libya, Morocco, Montenegro and Tunisia, on-job trainings were delivered to young scientists and local experts by experienced international scientists assigned by SPA/RAC. These on-job trainings embraced various themes, such as: benthos sampling using underwater visual census and cameras; fish sampling using underwater visual census; recognizing animals and plants underwater; alien species; importance of socio-cultural aspects in planning MPAs; the impact of MPAs on society; human impact on MPAs, etc. Furthermore, SPA/RAC enabled students, scientists, managers, etc. to participate in regional and international events in order to strengthen the exchange of expertise in terms of marine conservation.

Preparation of ICZM strategies and plans
PAP/RAC invested in on-the-job trainings. More than 30 experts were directly involved as members of the technical teams for the preparation of ICZM strategies and plans. These national teams were multidisciplinary, involving different scientific expertise. Besides technical teams, all strategies and plans have their steering committees, and sometimes also consultative committees composed of representatives of the government, businesses, academia and civil society. All of them are introduced to ICZM, its purpose, objectives and processes, and therefore their capacity is strengthened.

"Science for Management"
As part of the capacity building activities, the first "Science for Management" workshop was organized in 2013. The workshop was the first successful attempt to bridge the needs of managers in Mediterranean MPAs with regional scientists and scientific institutions by guiding a network of managers and scientists to answer key questions focused both on ecosystem health and socio-economic conditions, to achieve effective science-based management. The outcomes of the workshop informed the MedPAN's Scientific Strategy.

Sustainable tourism management planning in MPAs
Between 2013 and 2015, three regional training workshops on sustainable tourism management planning in MPAs were organized to provide the MPA planning teams with the tools and knowhow to plan tourism activities within their MPAs. The planning teams included a team leader and coordinator, key decision-makers and experts and, whenever possible, the MPA manager and lead staff. During the course of the trainings, more than 10 MPAs and relevant authorities/institutions addressed management shortfalls and closed data gaps through

[1] Bizerte, Tunisia, 26-30 May 2012
[2] Tunis, Tunisia, 1-2 June 2012
[3] Akyaka, Turkey, 10-14 February 2013

an Implementation Programme. Three small grants were also awarded in support to the project MPAs or to the sustainable tourism initiatives associated to the project MPAs, to enhance their working towards a more environmental management within their businesses.

MPA experts' database and Capacity Building Web Portal

Additional capacity building activities include the establishment of the first MPA experts' database. The database was established in collaboration with the MedPAN Association and is available at www.medpan.org. It provides contact details for experts that can support managers on various aspects of MPA business including science, management, finance, and links professional practitioners to MPAs, enabling a direct mechanism for collaboration and networking.

The first MPA Capacity Building Web Portal was also created during the project to service all training activities in the region. The Web Portal hosts interactive learning and networking tools, and is the first capacity building portal for MPA management in the world. It will be a practitioners' forum to network, share information, and access learning opportunities and interactive training material as well as photo and video libraries on Mediterranean MPAs.

Training on the Ecosystem Approach to Fisheries

Under the MedPartnership project, FAO executed the activity related to sustainable use of fisheries resources. It aimed to assist countries to sustainably utilize coastal and high seas fisheries resources through the application of the Ecosystem Approach including the application of targeted interventions to reduce bycatch and unsustainable fishing.

Capacity building efforts were dedicated to the training on the Ecosystem Approach to Fisheries (EAF) and to the process of development of Fisheries Management Plans consistent with EAF, to ensure the long-term sustainability of fisheries systems.

The project cooperated with other FAO-led Mediterranean fisheries management support projects - AdriaMed, CopeMed, EastMed and MedSudMed. A total of 66 fisheries managers and researchers were trained, including experts from Algeria, Bulgaria, Croatia, Egypt, Italy, Lebanon, Montenegro, Palestine, Tunisia and Turkey. This sequence of training sessions raised a wave of awareness and interest on the application of the Ecosystem Approach to Fisheries within the national fisheries administration institutions. FAO has since received several requests for support in setting up specific fishery management plans compliant with the EAF.

The momentum gained through this training facilitated the cooperation of the fisheries management institutions with the work on the compatibility of the national legal and procedural aspects of fisheries management with the EAF. Increasing the knowledge on the linkages between the legal and administrative management system on the one hand, and the requirements of an EAF approach, has also contributed directly to increasing the capacity of national fisheries administrations for fisheries management according to EAF.

Guidance towards a reduction in bycatch

The bycatch-related activity executed by FAO, resulted in some guidance being provided to the fishing industry on possible approaches that may lead to a reduction in bycatch and discard of unwanted organisms, and on the likely costs and benefits of each of these approaches. The main achievement was that the bottom trawl fishing industry is not only more aware of the problems created by an excessive level of bycatch, but has also knowledge on approaches that can be applied to reduce this, and of the economic benefits that this reduction can entail. This means that the industry has a real motivation to reduce bycatch and discards, based not only on hypothetical future benefits, but also on quite concrete short-term economic benefits. This raises a strong expectation that this industry may reduce its environmental impact appreciably in a reasonable time-frame.

Regional training to support NAP update teams
In the framework of the cooperation of UNEP/MAP with the UfM's Horizon 2020 Initiative to Depollute the Mediterranean, and the Technical and Administrative Support Project financed by the EU, a regional training/meeting was organized to provide support to NAP update teams in implementing the NAP update guidelines and to enable exchange of experiences with comparative projects and policy frameworks. The meeting was attended by around 60 country administrators and civil society. Practical sessions to strengthen national capacities to implement various steps in the NAP update – from the initial assessment to the selection of final programmes of measures – were a constituent part of the meeting. Economic analysis in the NAP update was an important topic of the meeting, whereas guidance on costing the implementation of four Regional Plans (on BOD from urban wastewater and food industries, on mercury and on marine litter) was presented and practical sessions were held on cost-effectiveness and cost-benefit analysis.

Technical trainings for managing land-based sources of pollution
In partnership with UfM's Horizon 2020 Initiative to Depollute the Mediterranean, and supported by the EU funded SWIM project, four regional technical training/meetings attended by around 200 participants were held to enhance country capacities and promote the use of best practices and Environmentally Sound Management for the following sectors: PCBs (April 2015, Istanbul); Lube oil and tanneries (July 2015, Barcelona) as well as in collaboration with the Basel Convention on ESM of hazardous waste for combating illegal trafficking (April 2015, Istanbul). Another regional training workshop took place on capacity building of environmental inspectorates (November 2014, Athens). It was attended by more than 17 participants from the Mediterranean countries and members of the Informal Mediterranean Compliance and Enforcement group. The training covered various subjects including: key principles for Environmental Inspection and Enforcement, Environmental Permits as well as case studies with best practices.
A regional training on an Emission Limit Value/Environmental Quality Standard (ELV/EQS) web-based tool was organized in Athens (November 2014) in cooperation with DELTARES. Representatives from 17 Contracting Parties were trained on the web based ELV/EQS tool, a useful and efficient tool to support country efforts in rationalizing their monitoring programmes and establishing a sound process linking the setting of ELV in line with GES/EQS.

Towards a green economy
MED TEST is a UNIDO green industry initiative that addresses land-based sources of pollution within priority industrial hot spots of the Mediterranean Strategic Action Plan (SAP-MED).
Under the MedPartnership project, a pool of 43 manufacturing sites, mostly SMEs, across 7 industrial sectors in Egypt, Morocco and Tunisia actively participated in MED TEST during 2010-2011.
Building national capacity, a core objective of MED TEST, relies on extensive training and a technical assistance program that targeted 6 national institutions and service providers and 30 local professionals, in addition to the staff of 43 demonstration companies. As a result, a network of local resources was engaged in promoting the TEST approach and extending the experience gained to other industries in the region. The active participation of the staff of the demonstration companies in the training and in the implementation of the project ensures sustainability of all identified actions at company level as well as the development of new projects. National roadmaps for market uptake and upscale of TEST in each country have been designed: dissemination and replication activities targeting new industrial sites will be

launched by the project's national partners and their institutional stakeholders with UNIDO support.

Environmentally sound management and disposal of PCBs
Of major importance were activities carried out in four Mediterranean countries to collect, transport and dispose in an environmentally sound manner 930 tons of PCBs, thus contributing to the global targets on POPs elimination by 2028.
The major objective was to introduce Environmentally Sound Management (ESM) to all stages of the 'life-cycle' of electrical equipment, containing or contaminated by PCBs. Activities were implemented in four Mediterranean countries, namely Egypt, Turkey, Albania and Bosnia and Herzegovina, instead of five envisaged originally. The project also focused on strengthening legislative frameworks, removal and disposal of up to 870 tons of PCBs, preparation of phase out plans for PCBs in electrical companies, and increased awareness and technical knowledge on the ESM of PCBs.
Capacity building and awareness raising activities were strongly integrated in the project implementation, addressing both practical and theoretical aspects of the almost entire PCB waste management cycle. The purchase of semi mobile analyzers/screeners delivered to Egypt, Turkey, Bosnia Herzegovina and Albania, coupled with the presence of trained national teams capable of undertaking accurate PCB inventory, contributed to ensure sustainability of PCB inventories beyond the project's life and undertake PCB site inspections. Demonstration sites for PCB sampling and analysis were identified in the four countries. A dynamic PCBs Inventory was carried out in three countries performing inventories in 42 utilities and other industries screening more than 300 appliances. As a result, 1100 tons PCBs were identified, out of which 930 tons were declared for export.
Theoretical and practical training on PCBs management was conducted for more than 157 local experts to audit transformers / capacitors and 169 local experts on Overall PCBs Management

Involvement of non-governmental organizations
Non-Governmental Organizations (NGOs) and Community Service Organizations (CSOs) play a key role in promoting environmental protection and sustainable development. Their active participation at local, national and transboundary level in all phases of projects and processes, from their design, implementation in the field, operationalization, monitoring and evaluation, contribute not only to increased transparency, wide visibility and outreach of the project or process, but also to enhanced overall quality and increased ownership of the project itself and its outcomes.
Within the framework of the MedPartnership, MIO-ECSDE developed and implemented a number of activities to keep NGOs and CBOs informed about the project and encourage them to participate in the numerous activities. At a first step, an "NGO Involvement Plan" was developed in order to inform the partners about the benefits of NGO and civil society involvement and the obstacles and challenges they may face; identify potential NGO involvement in the project along with guidelines for mobilizing this involvement. Some of the partners were regional bodies with such experience already practiced but others required support ranging from the identification of regional, national and local NGOs and CSOs to participate in specific project activities, to the tools and methodologies that can be used to engage them and other stakeholders.

At sub-regional level, and once again in synergy and complementarity with other on-going projects and processes that also aimed for the protection and sustainable management of the Drin River Basin, an interconnected hydrological system in the Southwest Balkans, MIO-ECSDE succeeded in keeping NGOs motivated and engaged in the MedPartnership related

activities, involving NGOs from Albania and Montenegro and other Drin Riparian Countries and developing a concrete display of commitment and solidarity among environmental NGOs of the sub-region. A direct impact of this MedPartnership facilitated process was that international donor agencies active in the region became interested in financing NGO activities to further enhance the progress made. As a result, a CEPF (Critical Ecosystem Partnership Fund) funded project was launched in 2014 named Act4Drin (Living well in harmony with the Drin, http://act4drin.net/). It is run exclusively by NGOs and aims at raising public awareness, enhancing knowledge and empowering NGOs to protect and conserve freshwater ecosystems in the Drin River Basin.

Synergies with other stakeholders

Throughout the project, important synergies were built with other projects and processes. Joint actions, shared expertise, capacity building and post-project planning in terms of civil society involvement and environmental mainstreaming were achieved with the GEF Small Grants Programme, the Horizon 2020 Initiative to Depollute the Mediterranean, the EU Maritime Days, the Union for the Mediterranean labeled projects BlueGreen Med-CS and Plastics Busters, the Mediterranean Circle of Parliamentarians for Sustainable Development (COMPSUD), the Mediterranean Circle of Journalists for Environment and Sustainable Development (COMJESD), MEdIES – an e-network of over 5000 educators in the region, and many others.

Virtual training course MedOpen on ICZM

An on-line training session of the virtual training course MedOpen on ICZM, specifically focused on climate change, was prepared and launched in May 2015 aiming to enhance policy dialogue and build / improve capacities on implications of climate change considerations, the ICZM Protocol and other related national policies. The target users of this training session were: decision makers (at the local, national, regional, and international level), policy advisors, project managers, teams and experts of international organisations and institutions, academic researchers, students, and all others interested in relevant issues. The basic module is continuously available to users, and open to everyone, providing elementary information on Climate Variability and Change (**CVC**) issues, delivered through lectures accompanied by quizzes. The advanced module is available only upon subscription and it includes additional materials available for download, and requires a high degree of commitment, participation in forum discussions and preparation of a final essay.

Coast day in the Mediterranean

The Mediterranean Coast Day, dedicated to climate variability and change, was celebrated on 25 September 2014 at Gammarth, Tunisia and was organised by PAP/RAC and APAL in the framework of the ClimVar & ICZM project. Around 250 persons attended the celebration with the participation of high-level decision makers, NGOs and research institutes, followed by a Forum of NGOs. For this occasion, a short animated movie on adaptation to CVC named “A good climate for change” was produced in French and English and subtitled in Croatian and Arabic. A 30-second trailer was also produced for wider dissemination. The movie was also screened at the 2014 Think Forward Film Festival in Venice. Promotional materials were also produced, as well as a media pack for Tunisian and other Mediterranean media, available in English, French and Arabic. A parallel celebration was also organised in the County of Šibenik-Knin in Croatia.

The ClimVar & ICZM project contributed to the celebration of the 2015 Coast Day as well. At the central celebration in Antibes, France, as well as at the celebration in Portorož, Slovenia,

PAP/RAC presented ClimVar & ICZM project activities and results at specific workshops dealing with climate change.

New tools and guidelines

In the framework of the MedPartnership and ClimVar & ICZM projects, a number of new techniques and tools were developed to help countries carry out their activities and facilitate communication between scientists and decision-makers.

Evaluation and mapping of aquifer vulnerability
The evaluation of the vulnerability of aquifers was a central theme of UNESCO-IHP's activities in the MedPartnership project, and two new methods were developed in this context: one for evaluating the vulnerability of karst aquifers to land-based pollution; and another that takes into account the phenomenon of seawater intrusion.

KAVA Method
Karst aquifers are an important source of drinking water in the Mediterranean region and are particularly vulnerable to pollution due to thin covering deposits, flow concentration within the epikarstic zone and concentrated recharge via swallow holes. UNESCO-IHP worked with the University of Zagreb's Faculty of Geotechnical Engineering on the development of a new method for evaluating and mapping the vulnerability of karst aquifers to pollution from land-based sources. This new Karst Aquifer Vulnerability Assessment method (KAVA method) is a multi-parameter GIS method that builds on standard methodologies and incorporates new parameters to address the unique nature of karst terrains. It is based on a conceptual model of origin-pathway-target (COST 620, 2004) and assesses vulnerability using four basic factors: overlay protection (O), precipitation influence (P), infiltration conditions (I), and aquifer conditions (IA).

Aquifer vulnerability was assessed at the Novljanska Žrnovnica karstic spring catchment area with the new KAVA methodology developed by the University of Zagreb's Faculty of Geotechnical Engineering (Credits University of Zagreb)

ACVM Method
In the course of dialogues and surveys conducted by UNESCO-IHP, countries identified seawater intrusion as a significant problem affecting the quality of many coastal groundwater reserves. Recognizing the need to consider this dimension in the evaluation of an aquifer's vulnerability to degradation, UNESCO-IHP and its partners developed a new method for the simultaneous evaluation of an aquifer's vulnerability to seawater intrusion and pollution from land-based activities. This new Aquifer Comprehensive Vulnerability Mapping method (ACVM) sets forth techniques for the evaluation and mapping of an aquifer's horizontal vulnerability (associated with seawater intrusion) and vertical vulnerability (land-based pollution) using a single parameter called "comprehensive vulnerability". The resulting vulnerability map – when combined with information about potential pollution sources – can be a valuable tool for communicating with decision-makers about the need to consider the vulnerability of groundwater to pollution when designating land uses. Furthermore, the map can provide indications about the parts of an aquifer that may be particularly prone to seawater intrusion, which can be taken into account by water managers as they decide upon the location of extraction wells and also in their determination of sustainable groundwater extraction rates.

Hydrogeochemistry as a tool for groundwater management
Coastal aquifers in densely inhabited zones are exposed to all the negative externalities associated with human activities, including excessive groundwater abstraction and pollution loads. Once elevated pollutant levels in groundwater have been detected, there is the subsequent need to determine the source of this pollution so that corrective actions can be taken. A new tool for determining the origin of common pollution concerns for coastal aquifers – including salinization and elevated nitrite levels – involves the use of multi-tracer hydrogeochemical techniques. This approach was demonstrated in the context of the MedPartnership between 2009 and 2012 at the Bou-Areg coastal aquifer and the adjacent Nador Lagoon in Morocco, and enabled researchers to identify which natural processes or anthropogenic activities were responsible for elevated levels of salinity and nitrites in the coastal aquifer and lagoon. These techniques can be used anywhere there is a need to identify pollution sources in coastal aquifers to facilitate the development of a targeted solution to these pollution problems.

IMF: "Integrative Methodological Framework for coastal, river basin and aquifer management"
PAP/RAC in partnership with GWP-Med and UNESCO-IHP produced a comprehensive and operational methodology for the integrated management of Mediterranean ecosystems encompassing coastal zones, river basins and coastal aquifers. The "Integrative Methodological Framework (IMF) for coastal, river basin and aquifer management" was prepared to help planners and practitioners achieve a shared, efficient and effective use of the typical human and logistical resources available in most Mediterranean countries, and to facilitate a better coordination, integration and involvement of all stakeholders, including the general public in the planning process. It has been applied within three coastal plans (Integrated Management Plan for the Buna/Bojana area in Albania/Montenegro; Coastal Plan for Reghaia, Algeria; and Coastal Plan for Šibenik-Knin County, Croatia). The process was also developed in parallel with the EU funded FP7 PEGASO project as a common roadmap for ICZM plan preparation and applied in 10 more demonstrations within this project and promoted through the CoastalWiki web site.
The IMF identifies the key sectoral and spatial dimensions within which integration must be defined, and sets out the methodology to achieve this. The IMF sets out a common 5-stage process to guide the preparation of coastal plans in the Mediterranean and beyond. The process provides a step-by–step guide to an integrated planning process and begins at the very start of the planning process (Establishment) through to implementation and facilitation of change (Realising the Vision). The process describes the objectives, activities and outputs of each stage, proposing methodologies, tools and examples.
The document was translated into French and is available on the MedPartnership and PAP/RAC web sites.

Guidelines for preparation of National ICZM Strategies required by the ICZM Protocol for the Mediterranean.
Produced by PAP/RAC, these guidelines were based on the requirement of the ICZM Protocol, and tested during the preparation of the national ICZM Strategies in Algeria and in Montenegro, as well as for the replication project Marine and Coastal Strategy for Croatia. Upon completion of the Algerian and Montenegrin strategies, the guidelines were revised, finalised and translated into French. They are available on the MedPartnership and PAP/RAC web sites.

Guidelines and recommendations for the evaluation and integrated management of groundwater-related Mediterranean coastal wetlands

In groundwater-related coastal wetlands, many ecosystem services are derived or supported by the presence of groundwater inflow and the roles it can play in supporting the hydrology and ecology of the wetland. The evaluation of the ecosystem services, their status, and trends, is essential for valuing the wetlands, as decision-makers at many levels are unaware of the connection between wetland condition and the provision of wetland services and the consequent benefits for people.
To evaluate groundwater-related coastal wetlands and get the basic information needed to ensure their sustainable development, the following actions need to be performed: identify the presence of groundwater-related coastal wetlands and delineate them; perform a geological and hydrological assessment of these coastal wetlands; conduct a hydrochemical assessment; define a baseline, and identify possible deterioration trends in water quality; identify the services that the wetlands are performing and assess their status and trends; identify the pressures that can have a negative effect upon a wetland functioning, its ecological status and services; evaluate how these pressures could change with time, and the possible actions that could be used to stop or decrease the impact of the pressures; identify the protection/regulatory tools available at local, national and international scales to protect the wetlands; and integrate wetlands management into water and land use planning and management.

Guidelines for NAP update
The guidelines address the process i.e. establishment of national steering committees (or similar bodies) and thematic working groups, stakeholder involvement and consultations, as well as links with other processes and policy frameworks promoting to the extent possible synergies and integration with a special focus on pollution prevention and control measures. The guidelines are complemented by a set of technical annexes addressing the estimation of national loads of pollutants discharged within the hydrological basin of the Mediterranean Sea, and criteria to assess the state of polluted sites to allow for their ranking within a range of hot spots and/ or sensitive areas categories based on GES targets. A set of indicators was also identified and selected to measure SAP-MED /NAP implementation. Finally, economic analysis guidance was developed for applying cost-effectiveness and cost benefit analysis in the final selection/ prioritization of NAP measures with the aim to improve financial sustainability of the NAPs and channel limited resources to the most effective/ beneficial actions (in terms of environmental as well as economic and social improvements).
The guidelines were developed as a collaborative effort with the MED POL Focal Points with support from the UNEP/MAP, and negotiated through two meetings held in March and December 2014, leading to their finalization in early 2015 and formal endorsement by the MED POL Focal Points meeting in June 2015. They represent the first effort of UNEP/MAP to develop methodologies using the ecosystem based national policy formulation, in the field of pollution prevention and control.

Promoting Environmentally Sound Management of key sectors and the use of Sustainable Consumption and Production tools and best practices
Under the MedPartnership, MEDPOL produced four guidelines or technical guidance documents that would improve, through their implementation after the project's end, the regulatory frameworks and environmental sound management for a number of sectors such as PCBs, lube oils, used lead batteries and tanneries in the Mediterranean countries.
These regional guidelines were inspired by the related pilot projects implemented by some Contracting Parties. They are practical, country-need driven, concrete and focus on implementation. In addition, the guidelines were prepared taking into account the most recent and relevant global development in particular those related to the Basel and Stockholm conventions.

Guidelines for the Environmentally Sound Management of PCBs
The guide on PCBs addresses the whole cycle of environmentally sound management of equipment, stocks and wastes containing or contaminated with PCBs in national electricity companies of Mediterranean countries. It aims to help all stakeholders establish dynamic inventories. Moreover, to support the countries to implement environmentally sound management of PCBs, the project produced a PCB management guide, PCB toolkit, PCB brochures and handouts for the four participating countries, a PCB inventory form, etc. It also created a PCB website and produced an awareness raising video.

Guidelines for the environmentally sound management of Lube Oil in the Mediterranean region
The guidelines suggest possible phases to the environmentally sound management of used oils in Mediterranean countries. The final objective of this guide is to provide Mediterranean countries with instructions on how to establish a regeneration system to recycle 100% of used oils.

Towards a more sustainable tanning sector in the Mediterranean
The guidelines "Towards a more sustainable tanning sector in the Mediterranean" were prepared in collaboration with the Regional Activity Centre for Sustainable Consumption and Production (SCP/RAC). They provide updated options for pollution prevention and priority or immediate actions for the tanning industry in Mediterranean countries. The guidelines provide recommendations on how to establish a minimum set of pollution prevention actions. These are presented as "the 10 most immediate pollution prevention options" for the tanning sector that can reduce the impact of the industry on environmental and human health at a cost-effective level for the private sector.

Guidelines for the Environmentally Sound Management of used batteries
The guidelines are aimed to help competent authorities and other stakeholders in the Mediterranean countries to establish systems for the environmentally sound management of used lead batteries and accumulators. They provide assistance for the legislative framework preparation and for building adequate infrastructure to collect valuable metals and avoid the negative impact on human health and the environment. These were developed based on the Syrian pilot project and the Technical Guidelines for the Environmentally Sound Management of Waste Lead – acid Batteries of the Secretariat of the Basel Convention (2003).

Assessment of the magnitude of Riverine inputs of nutrients into the Mediterranean Sea
The report on Assessment of the magnitude of Riverine inputs of nutrients into the Mediterranean Sea was prepared by the University of Perpignan, and presented to the MEDPOL Focal Points in 2013 along with a set of recommendations to improve monitoring and reporting. Based on this report it was planned to publish by December 2015 an Atlas in collaboration with the PERSEUS project.

The main objective was to develop a data base and GIS based modelling tool for the assessment of nutrient inputs into the Mediterranean Sea from rivers. The report highlighted that modelling allows to estimate the water discharge and nutrients fluxes for rivers without observations for nutrient or water discharge data. The trend analysis highlighted a decline of the water discharge in the last 50 years. This decline resulted largely part to a decreasing trend of precipitation. Meanwhile, increase in reservoir capacity and irrigated area are also a driver of this decline. Different climate scenarios show that regardless of change in water use, water discharge should continue to decline in the coming decades.

Modeling system to assess the variations of Environmental Quality Standards (EQS) with Emission Limit Values (ELS)

The testing of a modelling system to assess the variations of Environmental Quality Standards (EQS) with Emission Limit Values (ELS) for nitrogen and mercury in the Gulf de Lion and Izmir Bay led to the preparation of a web based model for setting ELV in industrial effluents to meet GES targets/EQS for a number of 10 pollutants with possibility for extension to cover additional pollutants. The web-based tool user manual was also delivered. The tool can be accessed online by the Contracting Parties and the wide public. The web based ELV/EQS tool was validated as a useful and efficient tool to support country efforts in rationalizing their monitoring programmes and establishing a sound permitting process linking the setting of ELV in line with GES/EQS.

MPA creation and management guidelines and teaching packages

With the aim to develop practical methodologies to create sustainable MPAs and make them available to managers and practitioners, SPA/RAC reviewed and edited a number of guidelines for MPA creation and management, elaborated within the Barcelona Convention's context. These included:

- "Guidelines for Setting-up and Management of Specially Protected Areas for Marine Turtles in the Mediterranean" developed in English and French;
- "Guidelines for the Establishment and Management of Marine Protected Areas for Cetaceans" developed in English; and
- "Guidelines for Management and Monitoring Threatened Population of Marine and Coastal Bird Species and their Important Areas in the Mediterranean" developed in English and French.

Guidelines on the actual needs of MPA planners and managers

SPA/RAC has also elaborated and edited a set of guidelines and teaching packages, meeting the actual needs of MPA planners and managers. These include:

- "Guidance for Building Marine Protected Areas Networks: Guidelines to improve the implementation of the Mediterranean Specially Protected Areas network and connectivity between Specially Protected Areas" developed in English and French;
-"Stakeholder Participation Toolkit for Identification, Designation and Management of Marine Protected Areas", developed in English;
- "Guidelines for the Monitoring of Lesser Crested Terns Thalasseus bagalensis emigrates" developed in Arabic and English;
- "Cetacean Manual for MPA managers", by ACCOBAMS, SPA/RAC and MedPAN developed in English;
- "Sustainable Financing of Marine Protected Areas in the Mediterranean: A Guide for MPA Managers", by MedPAN, SPA/RAC and WWF-MedPO developed in English and French;
- "Guide on Environmental Monitoring of Rocky Seabeds in Mediterranean Marine Protected Areas and surrounding zones", by the University of Seville (Spain); and
- "Simplified Manual on Ecological Monitoring in MPAs", by the University of Alicante (Spain).

Guidebooks for MPA practitioners in the Mediterranean

Between 2009 and 2015, WWF-MedPO produced a number of guidebooks and policy briefs as part of the regional trouble-shooting mechanism in support to MPA practitioners in the Mediterranean.

In 2012, the following guidebooks were developed:

- "Capacity building strategy to enhance the management of MPAs in the Mediterranean Sea" (Di Carlo G., et al., 2012), in cooperation with MedPAN and SPA/RAC;

- "Making Marine Protected Areas Work—Lessons Learned in the Mediterranean" (Gomei M. and Di Carlo G., 2012) on the steps and techniques for successful MPA management with key lessons learned from the project.
A policy brief promoting the benefits of MPAs was also developed in 2012.
- "Stakeholder engagement. Participatory Approaches for the Planning and Development of Marine Protected Areas", (Walton et al.,) was developed in 2013 in cooperation with NOAA. It presented steps and techniques for engaging stakeholders in MPA management.

Sustainable financing of new MPAs
MedPAN and SPA/RAC elaborated in collaboration with WWF-MedPO, a study on the financial needs of Mediterranean MPAs "Sustainable financing of Marine Protected Areas in the Mediterranean: A financial analysis". The study led to the conclusion that current levels of MPA underfunding are at risk of worsening, and that the international community is key in developing sustainable MPA funding for the region.
MedPAN, SPA/RAC and WWF-MedPO collaborated also in the elaboration of a Guide for MPA financing in the Mediterranean

Sustainable use of fisheries
With the aim to promote the sustainable use of fisheries resources through the application of the Ecosystem Approach to Fisheries (EAF), FAO developed a number of new tools and guidelines in support of fisheries management.
A major set of new tools and guidelines was produced under the project, associated with the activity of fisher-led monitoring of small-scale fisheries. The work in this area developed an original set of methodological tools for the efficient monitoring of small-scale artisanal fisheries by the fishing associations themselves, and produced two major guidelines for the setup of the system, and for the execution of the monitoring work by the fisher-samplers. These also cover the basic analysis of the data and the feedback to the fishing communities. These tools can be used in many similar situations across the world, and can form the basis of monitoring of small-scale fisheries systems in many countries of the world.

E-learning course on public participation
An e-learning course on public participation was developed by MIO-ECSDE for the free use of anyone in the region who would want to apply it in the framework of a project or process. A hand book version of the module is also available for those who prefer more traditional modes of learning.

NGOs database
An on-line database of Mediterranean environmental NGOs (http://www.mio-ecsde.org/ngos) was created at the very beginning of the project, and maintained throughout, to facilitate both general and targeted information dissemination (newsletters, e-circulars, news items, etc.).

The "**Guidelines for Adapting to Climate Variability and Change along the Mediterranean coast**"[4], prepared by PAP/RAC, aim to assist the integration of the CVC issues into national strategies and plans. It presents the different stages of ICZM, showing how climate change is relevant to each stage, what kinds of actions are needed to address climatic effects, and what information is available on these effects, especially in the Mediterranean region. It has also drawn lessons learned from the management of CVC in specific locations in the region and elsewhere. The report has also laid out the expected effects of CVC in the Mediterranean coastal zones. Its key considerations are: (a) investment in vulnerable areas may prove to be unwise if assets are subject to damages from the effects of climate change, (b)

[4] The document exists in English and French.

private agents will have to be given the right information and incentives in order to make the best decisions. The report provides details of the different sources of financing. Appropriate adaptation policies and measures are first and foremost those which can be established as "no regrets".

Assessment of the banking and insurance sector
Given the globalized nature of the insurance industry, and the common climate change risks around the world, an assessment of the banking and insurance sector[5] around the Mediterranean was prepared by PAP/RAC. The report was based upon a questionnaire that was sent to major insurance and banking companies operating in the southeast Mediterranean. Analysis relied upon information obtained from generic sources, due to the fact that only a small number of insurance and banking companies responded to the questionnaire. However, it remains relevant to the area covered by the ICZM Protocol, in particular for the governments to understand how CVC is addressed by key actors of the private sector involved in land use and management in coastal areas.

The **assessment of climate variability and change impacts and evaluation of response options** in two locations in Croatia and Tunisia using the DIVA (Dynamic Integrated Vulnerability Assessment) method, provides tools to influence the current practice of unsustainable coastal development around the Mediterranean. The assessment was based on three sea-level rise scenarios (a 21st century sea-level rise of 0.28m, 0.49m and 1.08m) and three socio-economic development scenarios based on the shared socio-economic pathways (SSPs). Impacts were assessed with and without adaptation in the form of upgrading dikes to protect against flooding and nourishing beaches and shores to protect against erosion.

Multi-country Information Sharing Platform (MedICIP)
The online Multi-country Information Sharing Platform (MedICIP) provides climate variability and change data of coastal areas in ten Mediterranean countries (harvesting information, metadata and links to data held by other institutions) via a map interface and also acts as a library of relevant reports and institutions. The design of the platform was overviewed by Plan Bleu and implemented by experts from the University of Geneva and UNEP / GRID Geneva.

A Multi-Scale Coastal Risk Index
Another output of the project is the “Application of a Multi-Scale Coastal Risk Index at Regional and Local Scale in the Mediterranean” which develops an integrated methodology that allows to identify the most vulnerable sites to climate variability and change (“climate hot-spots”) along the Mediterranean coastline, thus assisting the involved countries to better assess climate-related risks to their marine and coastal zones. The integrated methodology applied is a Multi-Scale Coastal Risk Index (CRI-MED) combining multiple data layers representing different aspects of risk (susceptibility, forcing, exposure), with one application at a regional level and a more detailed one at the local level in Tetouan, Morocco.
The resulting risk maps for the whole of the Mediterranean coastline represent the visualization and prioritization of risk in the coastal zones. The final risk rankings are dimensionless numbers that judge the relative degree of risk of coastal zones to each analyzed coastal hazard, in relation to qualitative risk classes (i.e. extremely high, high, medium, low, extremely low). In this sense, higher risk values do not imply high risk in absolute terms, but only a relative higher risk compared to other case coastal zones. In other words, the proposed methodology allows a comparative analysis of the involved Mediterranean coastal regions.

[5] The document is also available in English and French.

Country Sheets

Albania

Albania is a country in Southeastern Europe that has a coast on the Adriatic Sea to the west and on the Ionian Sea to the southwest, with a length of 476 km. Although a small country, Albania is distinguished for its rich biological diversity.
The coast is faced with many challenges, including unsustainable spatial development, solid waste and wastewater management, agricultural, fisheries, over-extraction of groundwater and inadequate infrastructure.
These problems are compounded by structural economic weaknesses and an inadequate policy framework. Upstream pressures include urbanization and land use management; hydropower production results in increased flood risk, and pollution. The area has a high vulnerability to climate variability and change, sea-level rise, increasing salinity and extreme events.

To address some of these issues, the MedPartnership project through its executing partners, has implemented a number of activities in Albania.
- Joint ICZM and IZRM plan integrating groundwater/aquifers for Buna Bojana River by PAP/RAC, GWP-Med and UNESCO-IHP
- Management of PCBs by MEDPOL and SCP/RAC
- Identification and planning new MPA in Porto Palermo by SPA/RAC

Integrated approaches for the implementation of the SAPs and NAPs: ICZM, IWRM and management of costal aquifers.

Integrated Management Plan for Buna/Bojana
The Bojana/Buna area is a single natural system extending into Albania and Montenegro with transboundary issues and problems. The Buna/Bojana River, its catchment, the underlying aquifers and coastal waters provide the common physical threads linking the two countries.
Albania has adopted a new water law in December 2013. The new law fully complies with the provisions of the EU Water Framework Directive, giving consideration for groundwater but not for coastal aquifers. The main authorities cooperating within the activity were Ministry of Sustainable Development and Tourism in Montenegro and Ministry of Environment in Albania.
The transboundary 'Integrated Resource Management Plan for Buna/Bojana' was developed by PAP/RAC, GWP-Med and UNESCO IHP, to assist Albania and Montenegro to sustainably manage the natural and anthropogenic environment in the Buna/Bojana basin and coastal area. The plan was developed and refined based on the guidelines of both the ICZM Protocol and the EU Water Framework Directive.
The plan proposes measures at the national and transboundary levels for addressing the area's main issues. It provides a basis for transboundary coordination that at present is largely ad-hoc, and considers impacts on the coastal zone and the river basin of upstream activities from the impacts of agriculture, tourism and urbanization, and marine impacts on the river delta and coastal aquifers.
Furthermore, UNESCO-IHP contributed with the analysis of the hydrogeological setting of the Plan Area, conducted in cooperation with the Geological Surveys of Albania and Montenegro. This work led to the first-ever joint hydrogeological map of the Buna/Bojana area, providing a valuable tool for natural resource managers in both Albania and Montenegro as it indicates the hydrogeological characteristics of the zone along with information about locations of springs, wells and groundwater pumping stations.
The Plan was developed over a 5-year timeframe and completed in 2015. To structure the analysis of the complex interplay between topic areas, the "DPSIR" framework was used. This multi-sectoral approach results with the measures to improve spatial planning, including the

economy, water quality, land, flood and waste management, to increase resilience to climate change and to maintain biodiversity. In addition, the Plan identifies potential transboundary governance structures to deliver it.
The Management Plan was a pilot application of the 'Integrative Methodological Framework (IMF) for coastal, river basin and aquifer management'. The development of the plan draw extensively on the guidelines of both the ICZM Protocol of the Barcelona Convention and the EU Water Framework Directive; being both incorporated in the legal frameworks of the two countries, the Management Plan forms an instrument for their application. The Ministry of Sustainable Development and Tourism in Montenegro and Ministry of Environment in Albania were the lead authorities.
As part of the Plan's elaboration, GWP-Med further conducted a detailed Stakeholders Analysis and a Characterization of the Buna/Bojana basin in accordance to the Water Framework Directive.

Management of coastal aquifers
UNESCO-IHP and national experts from Albania worked together between 2010 and 2014 on desk studies that formed the basis of regional synthesis on (1) an analysis of the legal, policy and institutional framework for groundwater management; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers; and (3) the state of coastal groundwater dependent wetlands and their services.
Coastal aquifers in Albania discharge important quantities of groundwater to the Sea via submarine discharges, with the main coastal aquifers located in the deltas of the Mati, Erzeni and Vjosa Rivers. Groundwater has traditionally been used for drinking water and industrial activities. Identified coastal groundwater quality concerns include degradation from intrusion of seawater and also pollution by nitrites and ammonia. In the aquifers studied, groundwater recharge rates exceeded abstraction rates, indicating a sustainable use of this resource.

There are about 10 main coastal wetlands in Albania, including the Ramsar-listed Butrinti Lake which accounts for the country's largest reservoir of mussel production. Groundwater plays a secondary role in the wetland's water regime, with the main water supply coming from the Ionian Sea. The wetland is impacted by agricultural pesticides and urban waste, and its natural functions were disrupted following the artificial change of direction of Bistrica River which has caused the lake to become eutrophic.

Environmentally Sound Management of equipment stocks and wastes containing or contaminated by PCBs in national electricity companies of Mediterranean countries

PCB Environmentally Sound Management in Albania
Activities of major importance were carried out under the project to collect, transport and dispose in environmental sound manner 930 tons PCB thus contributing to the global targets on POPs elimination by 2028.
The main objective was to introduce environmentally sound management (ESM) to all stages of the 'life-cycle' of electrical equipment, containing or contaminated by PCBs. It also focuses on strengthening legislative frameworks; the removal and disposal of up to 870 tons of PCBs at demonstration sites in five countries originally participating in the project; preparation of phase out plans for PCBs in electrical companies; and increased awareness and technical knowledge on the Environmentally Sound Management (ESM) of PCBs. The project cooperated with the Directorate General of Environmental Policy and Implementation of Priorities, of the Ministry of Environment.
Capacity building and raising awareness activities were strongly integrated during the project implementation addressing both practical and theoretical aspects of the almost entire PCB

waste management cycle. A national team was put in place and provided with the required experience to undertake accurate PCB inventory.

Capacity building and raising awareness activities were strongly integrated during the project implementation addressing both practical and theoretical aspects of the almost entire PCB waste management cycle. A national team was put in place and provided with the required experience to undertake accurate PCB inventory. A semi mobile analyzer/screener was delivered to Albania and contributed to build the capacity of the team in undertaking PCBs inspections and ensure sustainability of PCB inventories beyond the project life cycle.

Conservation of biological diversity: Implementation of SAP BIO and related NAPs.

Porto Palermo identified as new MPA

Porto Palermo Bay, situated in the Southern part of Albania, was selected to be a future MPA following consultations undertaken by SPA/RAC with the Albanian environmental authorities. The ecological studies conducted in 2013 and 2014, including the mapping of most important marine habitats and species, confirmed the presumed richness of the site. The ecological and socio-economic study reports of the Porto Palermo Bay area were finalized[6] in 2014.

A process of elaboration of the management plan of Porto Palermo Bay, based on the ecological and socio-economic assessments and consultations with the different stakeholders, was run during 2014.

On the other hand, SPA/RAC has made an extensive analysis of the existing legal and institutional frameworks in Albania, in close collaboration with IUCN-Med. In this regard, the report on the "Legal and institutional framework assessment for conservation of coastal and marine biodiversity and the establishment of MPA in Albania" has been endorsed by the Albanian environmental authorities, in both Albanian and English languages.

[6] in Albanian and English

Algeria

Algeria is the largest country in Africa, the Arab world, and the Mediterranean basin. The Algerian coast is particularly wide, with 1,600 km of coastline. Algeria's biodiversity is immensely rich. The main threats faced by Algeria's coastal and marine ecosystem are driven by human activity and include the destruction or overexploitation of biological resources, urbanization and infrastructure development, pollution and unplanned tourism development.

To address some of these issues, the MedPartnership project through its executing partners has implemented a number of activities in Algeria.

- Algerian Integrated Coastal Zone Management Strategy by PAP/RAC
- Reghaia Coastal Plan implemented by PAP/RAC with the support of UNESCO-IHP and SPA/RAC
- Management of Algerian coastal aquifers by UNESCO-IHP
- Pilot project on recycling and regeneration of used lubricating oils by MED/POL
- Concerted plan for the management of the marine part of the Taza National Park by WWF-MedPO

Integrated Approaches for the Implementation of the SAPs and NAPs: ICZM, IWRM and Management of Coastal Aquifers

Algerian Integrated Coastal Zone Management Strategy

During the last decade, considerable efforts were made to strengthen and adapt the Algerian legal and institutional framework to allow a rational development of the national coastal zone in Algeria. In January 2012, the Ministry of Land-use Planning and Environment, with the support of PAP/RAC, started developing its National Strategy, taking into account emerging problems such as climate change, which is one of the main threats the country will be facing in the coming decades.

The first step of the process consisted in the realization of a comprehensive diagnosis of the Algerian coast, and the formation of an *Inter-ministerial* Committee composed of representatives of Ministry of Housing and Urbanism, Ministry of Tourism, Ministry of Fisheries, Ministry of Industry, SME and Investment, Ministry of Water Resources, and Ministry of Agriculture and Rural Development.

By the end of 2014, a draft strategy focusing on 10 major strategic orientations was presented at the validation workshops in the three coastal areas, attended by representatives of various ministries and public institutions, the economic sector, and the civil and scientific society. It is estimated that 1,400 people were involved in some way in the realization of this document.

In March 2015, the Strategy was presented by the Algerian Minister of Land Planning and Environment, in the final conference in Oran. The minister expressed her hopes that the strategy would allow reframing actions for sustainable coastal development, and improve the efficiency of institutional and legal provisions.

Reghaia's Coastal Plan

The process to develop a national strategy for Integrated Coastal Zone Management (ICZM) and a Coastal Plan for the Réghaia area (Eastern Algiers) was initiated by the Algerian Ministry of Environment in partnership with PAP/RAC. The activity of Reghaia's coastal plan was supported by UNESCO-IHP, SPA/RAC and the French Conservatoire du littoral. As foreseen by the Article 18 of the ICZM Protocol, the ICZM plan specifies the orientations of the national strategy and implements it at the territorial level. In the case of this activity, the

pilot area covers two administrative units: the towns of Heraoua and the town of Reghaia, as well as the marine part up to the limits of the territorial sea. A DPSIR approach was implemented and served as a start for the participatory workshops of the "Imagine" method. This method was applied to agree with the stakeholders on the vision for the area, to define sustainability in concrete domains, and to decide in which direction the zone should go in the future, and how to reach desired outcomes.
In September 2015, the Plan was officially adopted by the Intersectoral Committee established in the framework of this activity. Developing the national ICZM strategy along with the coastal plan allowed to apply the measures developed for the national level on the ground, and to benefit from the feedback from this local experience.

UNESCO-IHP participated with in the elaboration of the National Strategy for Integrated Coastal Zone Management and the Coastal Plan for the Reghaia Area. Algeria is actively considering coastal aquifers in its natural resources planning efforts, as was evidenced in their recognition of coastal aquifers in these two documents. The University of Sciences and Technology Houari Boumediene (USTHB) and its Geo-Environment Laboratory contributed hydrogeological expertise to these initiatives, while Algeria's National School of Administration provided an evaluation of the legal, institutional and policy setting for coastal aquifer management.
Badji Mokhtar University and its Laboratory for Water Resources and Sustainable Development also contributed expertise on coastal wetlands in Algeria for the assessment of Mediterranean groundwater related coastal ecosystems.

Réghaia coastal area selected to become an MPA
In this context, the marine part of Réghaia coastal area has been selected to become an MPA. SPA/RAC carried out a socio-economic study in 2013, including the identification of potential stakeholders and partnerships that could be involved in the Réghaia future MPA creation and management.
In order to elaborate the management plan of the Réghaia future protected area, a complementary ecological survey and diagnosis were run. The management plan of the Réghaia marine area is under preparation in consultation with local and national stakeholders. A business plan for the future MPA is also being drafted.

Management of Algerian coastal aquifers
UNESCO-IHP and national experts from Algeria worked together between 2010 and 2014 on desk studies that formed the basis of regional synthesis on (1) an analysis of the legal, policy and institutional framework for groundwater management; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers; and (3) the state of coastal groundwater dependent wetlands and their services.
The legal framework for aquifers management in Algeria is rather comprehensive. It is composed of a water law including various provisions related to groundwater, as well as several regulations on the topic. However there is no specific mention of coastal aquifers. The institutional setting includes a Ministry of water resources and various ministries, as well as several public institutions.
The study revealed that Algeria is considered to have relatively limited water resources. Intense pressures from human activities including industry and tourism are placed on coastal aquifers and rising sea levels, have increased the vulnerability of these aquifers to seawater intrusion. The 59 coastal aquifers in Algeria are in most cases in connection with a surface water body. Irrigated agriculture accounts for the primary use of the groundwater in these aquifers. Submarine groundwater discharges are negligible, since many coastal aquifers are overexploited.

Guerbes coastal wetland

The Guerbes coastal wetland dependent on groundwater is located in the far eastern part of Algeria. It is composed of a succession of small swamps. The wetland is a Ramsar site. It is home to a wide variety of fauna and flora, it is therefore important for keeping the biodiversity. The area is characterized by intensive agriculture during summer (watermelon, melon and tomatoes) irrigated from the swamps, thus affecting the wetland and its ecosystem. Another strong impact is unplanned urbanization.

Pollution from land based activities, including Persistent Organic Pollutants: implementation of SAP MED and related NAPs

Management of used lube oils

The project aimed at initiating and starting the implementation of a policy reform for the management of lube oils in Algeria. Given that the country has no previous national experience with recycling waste lube oils, the project supported the delivery of model using and combining various experiences in other countries based on best practices.

Algeria's annual productions of waste lube oils are estimated at 180,000 tons, and about 130,000 tons are deemed recyclable. Presently only 20,000 tons are recycled per annum. The project delivered a technical economic study on the possibility to ensure lube oil recycling, model for national regulation, and an action plan on Environmentally Sound Management. It supported the Algerian Authorities to design a system for lube oil data base and inventory. The project execution was led by a National Steering committee and its results were reviewed and endorsed by the national workshop held in April 2015.

Conservation of biological diversity: Implementation of SAP BIO and related NAPs

Plan for the management of the marine part of the Taza National Park in Algeria

The Taza National Park was one of three coastal National Parks to apply for the extension of its borders to the adjacent marine area (about 9,603 ha) and the creation of a new MPA. The Park is located in the province of Jijel, in the north-east of Algeria, and its adjacent marine area hosts important spawning and nursery grounds for commercial fish, and a remarkable coralligenous community in a healthy state.

This fragile equilibrium however was threatened by increasing human pressure, exacerbated by the mounting investments in the Jijel area of the tourism sector. The fishing community already reported significant reductions in fish catches.

The Park Authority with the assistance of WWF Mediterranean Programme Office, through the MedPAN South project, produced all necessary documents for the official MPA designation by promoting the involvement of local communities in the development of the management plan and its future implementation.

> *"A key element in the preparation of the documents is to ensure that we cooperate with all local stakeholders in a participatory process. Failure to do so would seriously compromise the chances of success of the project."*
> Nadia Ramdane, Local project coordinator Algeria, Taza National Park

A second phase of the MedPAN South project was launched in 2013 to develop and implement strategies to better match conservation objectives with long term socio-economic benefits for local communities, ensuring fishermen support to the new MPA and eventually enabling the co-management of the future MPA.

Other partners also contributed to this activity including: Taza National Park (Local Project Coordinator), Direction Générale des Forêts (DGF) - Ministry of Agriculture, Commissariat National du Littoral (CNL) - Ministry of Spatial Planning, the Environment and Tourism, and the University of Jijel.

The development of the future MPA management plan including a zoning plan, was achieved through an extensive participatory multi-stakeholder planning process that lasted three years. A Steering Committee was established to engage and secure the commitment of local administrations to support the establishment of the new MPA. In parallel, and for the first time in Algeria, an Advisory and Consultation Commission was established to bring Park staff and community members together in the planning process. To raise awareness and enhance cooperation with relevant institutions and to inform local stakeholders about the values of new MPA and new economic opportunities, a series of national and local conferences and workshops were organized, and specific relevant material was prepared and disseminated.
In 2014, the sustainable tourism management planning process was launched. Training workshops were organized in support of the tourism management planning process and tailored to the local needs/priorities. A feasibility study was completed for the development of 2 trails (1 underwater and 1 terrestrial) in the National Park.
The approach applied by the Park is now regarded as a model to be replicated by other Algerian coastal National Parks.

Underwater Photo Competition
Within the MedPAN South project, the Taza National Park organized the first underwater photo competition featuring the coast of Jijel. In collaboration with the Rescue, First aid and Underwater Activities League of Jijel, the competition aimed at promoting responsible diving practices in the area. The Park took advantage of this event to promote MPAs as a tool for developing ecotourism and opened a dialogue with local stakeholders about the future MPA. The popularity of this event and the quality of the pictures presented contributed to strengthening the local support of the MPA creation. The League is now involved in the promotion of responsible diving practices in the region. The activity was transformed into an annual underwater photography contest involving tourists. Outdoor information panels and underwater leaflets about the marine heritage of Taza National Park are now available for tourists during the summer season.

Bosnia and Herzegovina

Bosnia and Herzegovina, is a country on the Balkan Peninsula in southeastern Europe. Its countryside is marked by deep gorges, turquoise rivers and lakes, and the Dinaric Alps' forests and crags. The country has only 20 kilometers of coastline. In Bosnia and Herzegovina, water management issues are of the competence of different entities. Each entity has adopted its water law including a consideration of groundwater, with similar principles. At the central level of each entity, a ministry is in charge of water along with other ministries and public institutions. Water is managed by district with two agencies established in the Federation of Bosnia and Herzegovina.

To address some of these issues, the MedPartnership project through its executing partners has implemented a number of activities in Bosnia and Herzegovina.

- Management of coastal aquifers by UNESCO-IHP
- PCBs Management by MEDPOL and SCP/RAC

Integrated Approaches for the Implementation of the SAPs and NAPs: ICZM, IWRM and Management of Coastal Aquifers by UNESCO-IHP

UNESCO-IHP and national experts from Bosnia-Herzegovina worked together between 2010 and 2014 on desk studies that formed the basis of regional synthesis on (1) an analysis of the legal, policy and institutional framework for groundwater management; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers; and (3) the state of coastal groundwater dependent wetlands and their services.
Bosnia and Herzegovina has one coastal aquifer, the karstic Trebišnjica aquifer, which extends into the territory of Croatia. The study showed that groundwater quality in this aquifer is generally good, and the aquifer has a high degree of natural protection from seawater intrusion. Groundwater reserves are far greater than extraction rates and this trend is expected to remain unchanged in the future. Surface and groundwater regimes were altered with the construction of several important dams and reservoirs during the era of the former Yugoslavia. The resulting complex, transboundary water management challenges have led to the establishment of successful cooperation on joint water monitoring programmes with Croatia and Montenegro.

The Hutovo-Blato (Ramsar site) coastal wetland dependent on groundwater is located in the south of Bosnia and Herzegovina, along the border with Croatia. The site should be considered as an integral transboundary site with the Neretva River Delta Ramsar site in Croatia. Underground drainage from upper karst fields springs provides water to the wetlands of Hutovo Blato. 50% of Hutovo Blato waters have been diverted to hydropower and there are plans for even more water diversion, putting the wetland under severe pressure.
Active partners of UNESCO-IHP's activities were the Ministry of Agriculture, Forestry and Water Management of the Republic of Srpksa, the Ministry of Agriculture, Forestry and Water Management of the Federation of Bosnia and Herzegovina, the Hydro-Engineering Institute (Sarajevo), and WWF med (Mostar).

Environmentally Sound Management of equipment stocks and wastes containing or contaminated by PCBs in national electricity companies of Mediterranean countries

PCB Environmentally Sound Management in Bosnia Herzegovina
Activities of major importance were carried out under the project to collect, transport and dispose in environmentally sound manner 930 tons PCB thus contributing to the global targets on POPs elimination by 2028.
The main objective was to introduce environmentally sound management (ESM) to all stages of the 'life-cycle' of electrical equipment, containing or contaminated by PCBs.

Under the project, Bosnia Herzegovina received 4 units of semi-mobile L2000DX analyzers/screeners. Capacity building activities were also included in the project and 75 local experts were trained on auditing transformers/ capacitors and using L2000DX Analyzers and on PCB management. The project also trained 6 local experts on the notification process of PCBs (import export).

Bosnia Herzegovina was supported in identifying up to 105 tons of PCBs for disposal. The notification process continues in the country, and France has approved the import of all the quantity identified for final disposal.

Croatia

The Republic of Croatia is located at the crossroads of Central Europe, Southeast Europe, and the Mediterranean. Owing to the presence of 1,246 islands the Croatian coastline is rather long, reaching 6,278 km. It is the second most indented coast in the Mediterranean.

Due to its specific geographical position on the dividing line between several biogeographic regions and due to its characteristic ecological, climatic and geomorphologic conditions, Croatia is one of the richest European countries in terms of biodiversity. However, a trend of loss of biological and landscape diversity persists in the country. Moreover, as tourism has become one of the most significant movers of economic development in Croatia in the last decades, accelerated urbanization and settlement expansion along the Adriatic coast are having a negative effect on landscape diversity.

To address some of these issues, the MedPartnership project through its executing partners, has implemented a number of activities in Croatia.

- Development of the Croatian Marine and Coastal Strategy by PAP/RAC
- Mapping the vulnerability of karst aquifers in Novljanska Zrnovnica and Pula by UNESCO-IHP
- Management and Monitoring and Evaluation plans for the existing MPAs by WWF-Med
- Ecological studies along the coasts of Croatian islands by SPA/RAC

Integrated approaches for the implementation of the SAPs and NAPs: ICZM, IWRM and management of costal aquifers.

Croatian Marine and Coastal Strategy
In 2012, Croatia has launched the process of preparation of the Marine Strategy, as requested by the EU's Marine Strategy Framework Directive (MSFD). The first assessment completed was the "Initial assessment of the state of marine environment in the Croatian Adriatic". In the meantime, the Government of Croatia has ratified the ICZM Protocol for the Mediterranean, which requires the preparation and adoption of national coastal strategies. Knowing that 80% of marine pollution comes from land-based sources, and having the opportunity to secure additional funding from the MEReS, the Croatian Government decided to integrate these two strategies and to continue with the preparation of a joint Marine and Coastal Strategy for Croatia.
With the MedPartnership replication support, Croatia will respond with one Strategy to two legal documents – ICZM Protocol and EU MSFD.
The Coastal and Marine Unit of the Ministry of Environment, which is responsible for this strategy, established an inter-ministerial committee for the preparation and implementation of the Marine Strategy. The committee was extended to include representatives from the government dealing with the terrestrial part of the coastal zone.
The strategy is meant to propose the optimal institutional framework for marine and coastal management, but also the measures for the future sustainability of the Croatian sea and coast. The process of preparation is highly participatory, through the inter-ministerial committee, on one hand, and the participatory workshops to be held in all coastal counties, on the other hand. The Marine and Coastal Strategy developed under the MedPartnership's MEReS, will be followed by the detailed Programme of measures, and it will be jointly adopted by the Croatian Government.

Mapping the vulnerability of karst aquifers in Novljanska Zrnovnica and Pula in Croatia

UNESCO-IHP and national experts from Croatia worked together between 2010 and 2014 on desk studies that formed the basis of regional synthesis on (1) an analysis of the legal, policy and institutional framework for groundwater management ; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers; and (3) the state of coastal groundwater dependent wetlands and their services. Croatia has a rather comprehensive legal framework for water management based on the EU Directives. It gives due consideration to groundwater within the river basin however without any specific mention of coastal aquifers. The institutional framework seems to be rather clear with a national agency in charge of water management –
Croatian Waters, and the Water Management Directorate under the Ministry of Agriculture.

Coastal aquifers in Croatia are primarily karstic in nature, with significant discharges of fresh groundwater to the Adriatic Sea. The greatest pressure on most coastal aquifers is the uncontrolled abstraction of groundwater for irrigation, which leads to lowered groundwater levels and seawater intrusion in many areas. Apart from salinization, the quality of groundwater in coastal aquifers is also negatively impacted by pollution from the intensive use of fertilizers and pesticides in agriculture as well as the release of untreated wastewaters from human settlements. Karst aquifers – like those in Croatia – are particularly vulnerable to pollution from land-based activities due to thin soils or absence of covering deposits, amongst other reasons.
Recognizing the need to raise awareness about the link between land-based activities and groundwater pollution, UNESCO-IHP worked with leading Croatian institutions on case studies to map the vulnerability of karst aquifers in two coastal areas in Croatia. The first of these case studies was led by the Croatia Geological Survey and focused on the Pula coastal aquifer, where two commonly-used methodologies for assessing aquifer vulnerability were tested to determine which was best suited to karst aquifers. The second case study was conducted at the Novljanska Žrnovnica karstic spring catchment area by the University of Zagreb's Faculty of Geotechnical Engineering, which built on the experience of four standard vulnerability assessment methodologies and developed a new methodology specifically adapted to the karst environment (the Karstic Aquifer Vulnerability Assessment method – KAVA).
Additional expert knowledge on coastal aquifers and groundwater in Croatia was provided by Croatia Waters (hydrogeology), the Ministry of Agriculture (legal), and the University of Zagreb's Faculty of Geotechnical Engineering kindly hosted the UNESCO-IHP regional training workshop on aquifer vulnerability mapping and spatial applications to groundwater management in Varazdin in February 2015.

Neretva Delta River Wetland

The Neretva Delta River Wetland (NRDW) (Ramsar site) is situated in the southern part of Croatia on the Adriatic coast. The wetland is fed by groundwater and surface water. It is characterized by a diversity of wetland habitats mixed with agricultural land surrounded by karst hills and the Adriatic Sea at the river mouth. The ecological character of the NRDW is threatened by intensive agriculture, spreading of urban zones, untreated wastewater, non-regulated touristic activities and illegal fishing and hunting.

Conservation of biological diversity: Implementation of SAP BIO and related NAPs.

Ecological studies along the coasts of the islands of Prviéć, Sveti Grgur, Goli, Krk, Rab, Veliki, Mali Ćutin, Susak, Unije, and Srakane

Following the signature, on 13th March 2013, of the Memorandum of Understanding between SPA/RAC, the Ministry of Environmental and Nature Protection of the Republic of Croatia, the State Institute for Nature Protection and the Public Institution Priroda, ecological studies were conducted along the coasts of the islands of Prvié, Sveti Grgur, Goli, Krk, Rab, Veliki and Mali Ćutin, Susak, Unije and Srakane, in 2013 and 2014, in order to map species and habitats and to assess their status. A socio-economic and fisheries study was also conducted with a view to encouraging sustainable fishing in the region. In addition, two national monitoring protocols for Posidonia and Coralligenous habitats and a field manual for monitoring of Posidonia oceania beds were developed.
Furthermore, as part of a national capacity building programme, three trainings on GIS application with regard to marine environment were delivered at the Public Institution Priroda in Rijeka and in Zagreb, and benefited to 6 Croatian environmental agencies technical staff.

SPA/RAC also elaborated an extensive analysis of the existing legal and institutional frameworks in Croatia, in close collaboration with IUCN-Med. The report on the "Legal and institutional framework assessment for conservation of coastal and marine biodiversity, and the establishment of MPA in Croatia " has been endorsed in 2014 by the Croatian environmental authorities.

Management and Monitoring and Evaluation plans for 5 existing MPAs
Despite the relatively high number of MPAs in Croatia, their protection status and quality of management was rather low at the outset of the MedPartnership project. Although some of them were established in the early 1960's, they still lacked clear conservation objectives, management plans and procedures for monitoring their effectiveness. Much of this was due to insufficient investment in nature conservation and insufficient capacity of management institutions.
A common participatory MPA management planning approach was developed and implemented in 5 MPAs (Lastovo Islands and Telašćica Nature Parks, and Mljet, Kornati, and Brijuni National Parks), with the technical support of WWF, that contributed to the networking of all existing MPAs in Croatia.
The project was implemented in partnership with the Association for Nature, Environment and Sustainable Development -SUNCE (Local Project Coordinator), Ministry of Culture (2009-2010) , Ministry of Environmental and Nature Protection (2010-2015), Ministry of Agriculture, Ministry of Tourism, State Institute for Nature Protection (SINP), Brijuni National Park, Kornati National Park, Mljet National Park, Lastovo Archipelago Nature Park, Telašçica Nature Park and County level authorities.

All five existing Croatian MPAs have successfully worked towards standardising their MPA management planning process, while enhancing collaborations with relevant administrations, stakeholders and NGOs. By 2014, all management plans were completed, approved and endorsed by the relevant Park Management Boards and Ministry of Environmental and Nature Protection.

The project facilitated the consultation process at site level, provided technical assistance and built the capacity of MPA managers and officers of relevant authorities on specific issues such as management planning, stakeholders' involvement, monitoring and business planning. The involvement of key stakeholders contributed to clarifying the complex legislation and competencies of each institution by creating a standardised approach to MPA management planning, implementation, and monitoring.

Developing tailored capacity building activities into the step-by-step MPA management planning process

A series of capacity building activities were built into the participatory management planning processes implemented at each of the 5 MPAs participating to the project in Croatia. Training events were directly followed by the implementation of acquired skills into management planning for these 5 MPAs. This helped the staff produce a solid management framework through a participatory approach, engaging stakeholders in the planning process for each MPA. Consultations, open dialogue, negotiation, and conflict resolution were key to ensuring commitment and endorsement of MPA goals by the local communities. In addition, the events allowed MPA staff to begin in-house monitoring programmes and to prepare business plans for their MPAs.

“The most valuable knowledge I learned was to approach the problem in a different way and change my opinions and priorities.” Croatian participant in the MPA management planning workshop

Exchange visits: effective tool to transfer knowledge, enable cooperation and build trust

To facilitate the dialogue and reciprocal understanding among stakeholders and to show how effective solutions were found at other MPAs, a delegation of management authorities, fishermen, and diving operators from two project MPAs from Croatia visited Cabrera National Park in Spain. This MPA is a good example of how a multiple-use zoning plan can be developed and can provide economic benefits to local stakeholders. “Interaction with local fishermen, diving operators, and park authorities gave us new insight into what we can do in Croatia” stated Marko Frlan, diving center owner from Croatia. Upon returning to Croatia, participants shared their experience with colleagues and local stakeholders who were more supportive to the development of the MPA zoning plans.

Ivica Lešić, professional fisherman, changed his opinion on the effectiveness of no-take zones: “I was a strong opponent of new fishing regulations, but after talking with Cabrera fishermen I believe no-take zones might work in Croatian MPAs.”

"This is one of our best protected areas management projects at the Ministry of Culture. Only few projects feature such planned outputs, and such intensive and productive intersectoral cooperation."

Loris Elez, Protected Areas Department, Head Nature Protection Directorate of the Ministry of Culture

Integration of Climatic Variability and Change into National Strategies to implement the ICZM Protocol

Croatia is one of the Mediterranean countries with the highest ratio of coastal length per inhabitant. Driven by tourism as well as by its rather limited offer in accommodation, urbanisation of the Croatian coast is a continuous and ever threatening trend. Faced with limited economic opportunities, pressures for construction along the coast are a constant trend. Seasonal character of tourism encourages the construction of tourism facilities in the zone with the greatest danger from sea-level rise and related events. These were the reasons to launch the assessment of the potential costs of the sea-level rise and other climate variability and change related damages for Croatia.

DIVA assessment in Croatia

The “Assessment of Costs of Sea-Level Rise in the Republic of Croatia including Costs and Benefits of Adaptation” was completed in April 2015 and published as a report in September

2015. It was presented to the Croatian inter-ministerial committee for the preparation and implementation of the Marine and Coastal Strategy. The assessment showed that the impacts of the sea-level rise in Croatia will be substantial in the 21st century, in the absence of adaptation measures. The area of Croatian coastal zone exposed to the 1-in-100 year coastal extreme water level will increase from the current 240 km2 to 320-360 km2 in the late 21st century. The expected number of people flooded annually will increase from 17,000 today, to 43,000-128,000 in 2100 and the expected annual damages from USD 40 million today to 0.9 to 8.9 billion per year in 2100. The analysis also showed that impacts can be significantly reduced by applying the appropriate adaptation measures. Adaptation investment depends on the population density threshold above which dike construction should take place. If the segments with >30 inhabitants/km2 are protected, this would result in protecting 84% of Croatia's coastline, costing USD 8.4 billion. For segments with >200 inhabitants/km2 the share of coastline would be 47%, costing USD 4.6 billion. While these costs are substantial, they are significantly lower than the avoided damage costs.

Demonstration project in Šibenik-Knin County

Šibenik-Knin County is a coastal county in Croatia covering 2,984 km2. It includes 242 islands that make up 19.2% of all Croatian islands. The county is among the richest Croatian coastal counties as for the natural beauties and resources which makes it an attractive tourist destination. However, it is among the poorest in economic terms. With the river basin of Krka and more than 200 islands, this county is immersed into water. Therefore, a coastal plan, the local assessment of vulnerability to climate variability and change, and participatory method "Climagine" were implemented as a potential source of inspiration for the regional authorities looking for solutions for the future of this county. The implementation of the "Imagine" participatory method served as the basis for developing the "Climagine method". Imagine is a method that was applied by Plan Bleu / RAC from 2000 to 2006, in five Coastal Area Management Programmes (CAMP).

Results of the local assessment of vulnerability

The assessment of climate variability and change impacts and evaluation of response options have been done in a more extensive framework, encompassing impacts on economic sectors that are important for Šibenik-Knin County, including tourism, agriculture, fisheries, water management, manufacturing, maritime transport, and energy sector. The selection of the issues to be covered with this "Local Assessment of Vulnerability to Climate Variability and Change for Šibenik-Knin County Coastal Zone" was based on the issues raised by stakeholders during the "Climagine" participatory process, as well as on the discussions with PAP/RAC and its experts. Key partner in providing information was the County Government, in particular the Department of Environment and Municipal Affairs, Department of Economy, Department of Maritime Affairs, Transport and Insular Development, Department of Physical Planning and the Regional Office of the Protection and Rescue Directorate.

The greatest potential CVC impacts in the Šibenik-Knin County will be reflected in damage to coastal assets. Primary residents, owners of the secondary houses, and tourism facilities located in the low-lying coastal zones will be particularly affected. These impacts will also include nautical tourism assets and protected sites. Other impacts on tourism are likely to be smaller. Agriculture yields are likely to be impacted by changing precipitation and temperature trends and crop damage from more extreme weather. Fisheries may be affected by altered distribution of fish species and a greater number of invasive species, while aquaculture may be affected by increased salinity. Climate change will worsen the current issues with water supply, with increasing temperatures and reduced precipitation leading to decreased water availability in the summer months. In the winter, on the other hand, heavier precipitation, and flash floods will pose a risk to assets and infrastructure in urban areas and

coastal zones. Impacts on other sectors, such as manufacturing, maritime transportation and the energy sector, are also likely, but more detailed studies are needed for these areas. Impacts on human health and cultural heritage sites and on the incidence of wild fires are also imminent.

Coastal Plan of Šibenik-Knin County

The Coastal Plan for Šibenik-Knin County aims to provide recommendations for increasing the resilience of coastal zone. It addresses the challenges posed by climatic variability to the county's coastal zone, primarily in terms of spatial planning, coastal protection, water management, regional development and biodiversity management. Because of the great pressures on the narrow coastal belt, special attention was devoted to preserving landscape values.

Key partner in preparing the Plan was the County Government, in particular the Department of Environment and Municipal Affairs, and the Institute for Physical Planning. However, within the stakeholder analysis, a large number of important stakeholders were identified, and involved whether through the participatory workshops, or almost 30 interviews completed by the PAP/RAC and its experts.

The objectives of the coastal plan were to promote sustainability and resilience as coastal zone development criteria; create prerequisites for defining sustainability in concrete domains; contribute to the strengthening of participation and education; provide guidelines for sectoral policies and plans to achieve sustainability and resilience; and offer a platform for sustainable development of the coastal zone based on water as its fundamental resource, blue economy and smart specialization.

The coastal plan was developed in parallel with the four "Climagine" participatory workshops and a series of interviews. Each of the workshops had an educational component. These workshops were also used to agree on a vision for the future coast and to discuss the expert findings in the Plan preparation. Participants agreed on the indicators of sustainability, with specific focus on climatic variability as well as on the sustainability range for each indicator. The plan will be presented to the County Assembly for adoption. It recommends solutions for building coastal resilience to climatic variability by reducing (physical and economic) vulnerability, improvement in water management, management of spatial development and landscape valorisation and management. The plan provides recommendations for spatial plans in the coastal zone, for regional development strategy and for plans for other sectors facing climatic impacts. Implementing the recommendations and measures of the coastal plan will decrease the damage caused by climate variability and change, assist internalization of the environmental costs for more sustainable development, and provide a more resilient economy in the county coastal zone.

Egypt

Egypt is a transcontinental country spanning the northeast corner of Africa and southwest corner of Asia, via a land bridge formed by the Sinai Peninsula. It is the most populous country in North Africa and the Arab World, the third-most populous in Africa. Egypt has a long coastline on the Mediterranean and has a lot of equipment containing PCB.
The great majority of its people live near the banks of the Nile River, an area of about 40,000 square kilometers, where the only arable land is found. Human populations in Egypt's Mediterranean coastal area rely heavily on groundwater in three main coastal aquifer systems covering nearly 18,000 km2.

To address some of these issues, the MedPartnership project through its executing partners has implemented a number of activities in Egypt.

- Development of IWRM strategies and planning by GWP-Med
- Mariyut Lake by UNESCO-IHP
- MED TEST by UNIDO
- PCBs disposal by MEDPOL and SCP/RAC
- Management plan of Sallum MPA by SPA/RAC

Integrated approaches for the implementation of the SAPs and NAPs: ICZM, IWRM and management of costal aquifers.
Development of IWRM strategies and planning
Egypt is a pioneer country in the development of IWRM strategies and planning.
In 2009, the 'Sustainable Financing Strategy for Water Supply and Sanitation for the Greater Cairo area' was elaborated falling within and feeding into national efforts towards sustainable water supply and sanitation for the entire population. A 'Household Affordability Assessment' at national scale was also part of the outputs. These were prepared by GWP-Med and OECD under the lead of the Holding Company for Water and Wastewater as well as the Ministry of Housing, Utilities and Urban Planning of Egypt, through an inclusive stakeholder consultation process, and within the MED EUWI framework and co-contribution.

Stemming directly from the above technical findings, the Egyptian authorities requested an 'Assessment of Private Sector Participation in the Water Sector in Egypt' which was conducted by GWP-Med and OECD in 2010. The assessment offered a tool for informed policy making, providing insight on the challenges and opportunities from enhanced involvement of the private sector with emphasis on water infrastructure and at a time when the country was embarking on larger scale sanitation projects necessitating private sector participation.

The overall dialogue process and technical work, aside from detecting the magnitude of the water sector's financing gap, served as a platform for awareness raising and consensus building among involved decision-makers and stakeholders from more than 50 different institutions and organisations, by discussing different scenarios and policy options for meeting water supply and sanitation targets as well as related environmental objectives.

Management of Coastal Aquifers
UNESCO-IHP and national experts from Egypt worked together between 2010 and 2014 on desk studies that formed the basis of regional synthesis on (1) an analysis of the legal, policy and institutional framework for groundwater management; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers; and (3) the state of coastal groundwater dependent wetlands and their services.

The legal framework in Egypt for water management is composed of two laws (law 12/1984 on irrigation and drainage and law 213/1984) addressing primarily irrigation, being the dominant water use sector. A law for groundwater was drafted in 2010, but was not adopted until now. At the institutional level, the water sector is governed by the Ministry of Water Resources and Irrigation.
The study showed that agriculture accounts for the primary use of these coastal aquifers, with important quantities of groundwater also extracted for domestic uses including drinking water. Groundwater quality concerns arise from seawater intrusion from over-exploitation of groundwater for agriculture and domestic purposes, as well as from leaching of wastewater from unlined septic tanks.
Lake Mariut is located in the western side of the Nile river delta. It is a closed lake. In the present time, the remaining part of the Lake is made up of several basins, dissected by roads and embankments. The lake is highly dependent on groundwater discharge, and nowadays it receives significant industrial and domestic wastewater. The main service is fishing with traditional fishermen communities still established in the area of the lake. However nowadays Mariut Lake is bordered by fish farms, villages and agricultural lands.
UNESCO-IHP's main partner for its activities in Egypt was the Institute for Groundwater at the National Water Research Centre

Facilitation of policy and legislative reforms for SAP-MED
Transfer of Environmental Sound Technology in the South Mediterranean Region— (MED TEST)
Industry represents about 38% of the GDP in Egypt and the most important sectors are textile, food and chemicals. Approximately 40% of the Egyptian industrial capacity is located in the Alexandria region, which is affected by intense pollution into the Mediterranean Sea. MED TEST, the UNIDO initiative, has targeted 16 industries in Egypt, both SMEs and large industries, across several industrial sectors, contributing to the industrial pollution hot spots of Abou Qir, El Mex Bay and Maryut Lake, within the Alexandria Region. The MED TEST project in Egypt was implemented by the Egyptian National Cleaner Production Center (ENCPC) in cooperation with Environmental and Water Engineering Consultants (EWATEC), a consultancy firm in Alexandria.

Many companies were supported in establishing a proper monitoring system for water & energy consumption, including the installation of metering and internal accounting procedures. National roadmaps for market uptake and upscale of TEST have been designed. The project opened up a wide range of measures new to the management, as well as opportunities for accessing investment subsidies.

Pollution from Land-based Activities, including persistent organic pollutants: Implementation of SAP-MED and related NAPs

Environmentally sound management of equipment, stocks and wastes containing or contaminated with PCBs in national electricity companies
The project focused on the regions of Cairo and Alexandria, where most of the industrial zones are and where more than 40 million persons live. The country had developed a database recording the equipment potentially containing PCBs and expressed their need for support in the collection of data. Being the competent Egyptian authority, the Egyptian Environmental Affairs Agency (EEAA) requested support in training local experts on sampling, identification and classification of equipment containing PCB.

The project included both theoretical and practical training in all aspects of identification, storage, transport and disposal of PCB. It also had a module on transboundary movement of hazardous waste in accordance with the requirements of Basel convention.
The practical training on transformers drainage filled with PCB, and packaging according to international transport regulations IMDG (sea) ADR (road) provided local experts and companies an opportunity to gain experience on handling.
Under the project, Egypt received 2 semi-mobile L2000DX analyzers/screeners. Moreover, 170 local experts were trained on auditing transformers/ capacitors and using analyzers, 101 local experts were trained on PCBs management and 69 were trained on importing and exporting PCB. The country was also supported to identify up to 182 tons of PCBs for disposal purposes, and received a regional guide on PCB management.
The notification procedure has started and is still running. The final quantity to be transported to France for disposal by the end of year 2015 is 182 tons.
As a result of the project, the major plant of electricity distribution in South Cairo purchased a PCB screener to check the dielectric oil, in all devices sent for repairs or control. The customs authorities of Alexandria started checking transformers imported into the country, requesting that all imported transformers and dielectric oils have a PCB free certificate.

Conservation of biological diversity: Implementation of SAP BIO and related NAPs

Management plan of Sallum MPA
With additional funds from the European Commission over the 2014 - mid-2015 period, SPA/RAC has been provided some support to the efforts towards the planning for the management of the Marine Protected Area of Sallum. It is only by end 2014 that SPA/RAC received a preliminary approval from the Egyptian authorities for the Sallum Bay MPA activity. For that aim, a technical meeting with the representatives of the Egyptian Environmental Affairs Agency (EEAA) was held in Cairo, in January 2015.
With the project coming to an end, the relevant Egyptian authorities and the MedMPAnet team have agreed that at this stage, only a socio-economic study in the Sallum region can be done. A literature review and data collection on the relevant socio-economic activities related to the Sallum Bay MPA were conducted during the first half of 2015. The ecological survey of the area as well as the elaboration of its management plan will be conducted in the framework of future projects implemented as follow-up to the MedPartnership.

Lebanon

Lebanon is located in Western Asia and has a coastline and border of 225 kilometers on the Mediterranean Sea. The narrow and discontinuous coastal plain stretches from the Syrian border in the north to Ras al-Naqoura in the south. The fertile coastal plain is formed of marine sediments and river deposited alluvium alternating with sandy bays and rocky beaches.

One of the major environmental issues in Lebanon is water supply. The country has greater water resources than many other Middle Eastern countries; however, it is at increasing risk of shortages, particularly during the dry summers. A variety of factors affect the water and coastline of Lebanon, including marine pollution. High coastal population density (greater than 1,500 inhabitants per km2) and a heavy reliance on groundwater result in significant pressures on coastal aquifers. Seawater intrusion is the most common groundwater quality problem. Agriculture is the main pressure driver for several risks associated with coastal aquifers, including salinization, nitrification and yield reduction. Industrial activities have also introduced heavy metals, organic compounds and hydrocarbons into some aquifers.

Lebanon has undertaken a major reform of the institutional framework for its water sector with the adoption of law n° 221/2000, which created four water establishments in charge of studying, implementing, operating, maintaining and renewing water projects (distribution of drinking water, irrigation, collection and disposal of waste water). From the legal aspect, there is no comprehensive water law as such, but rather scatted texts some of them dating back to the Ottoman period (provisions from the Mejelle 1875) and French mandate (1925 & 1926).

To address some of these issues, the MedPartnership project through its executing partners has implemented a number of activities in Lebanon.

- Management of aquifers and wetlands by UNESCO-IHP
- Long-term IWRM strategy development by GWP-Med
- Contribution to the development of the new Lebanese 'National Water Sector Strategy' by GWP-Med
- Awali River and coastal area management by GWP-Med
- Collecting data and improving ecological knowledge on marine and coastal biodiversity by SPA/RAC

Integrated Approaches for the Implementation of the SAPs and NAPs: ICZM, IWRM and Management of Coastal Aquifers

Management of Coastal Aquifers

UNESCO-IHP and national experts from Lebanon worked together between 2010 and 2014 on desk studies that formed the basis of regional synthesis on (1) an analysis of the legal, policy and institutional framework for groundwater management; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers; and (3) the state of coastal groundwater dependent wetlands and their services.

The study showed that coastal aquifers in Lebanon are mainly karstic in nature and discharge significant quantities of water to the Mediterranean. Groundwater satisfies nearly 45% of Lebanon's total water needs. In 2005, water withdrawal by sector was distributed among agriculture (60%), domestic uses (29%) and industry (11%), and these trends are generally reflected in withdrawals of groundwater from coastal aquifers.

In a detailed case study, two wetlands along the Lebanese coast, the Ras Ech-Chekkaa and the Tyre Beach sites (Ramsar), were investigated to assess the impact of climate change and the related human interference on water resources (surface and groundwater) and the related land use in these wetlands. In the Ras es Chekka site the study concluded that a serious change in

the surrounding hydrological and hydrogeological system has already serious affected the site, with the limited number in flora and fauna and the decrease in the number of migratory birds. The Tyre Beach wetland is located along the southern Lebanese coast, and represents saturated clayey terrain where a number of springs and seeps exist. It is classified as a Ramsar site and as a Natural Reserve. Being considered as a Natural Reserve, Tyre Beach wetland has been well preserved and received due attention. Therefore, a number of crops are planted and the landscape has been well conserved, despite human impact and effects of climate change on rainfall and water resources. The decline in the rainfall and the increase in temperature have not influenced the volume of water in this wetland. However negative human impact is recorded in this site. The study concludes with appropriate recommendations at the individual, institutional and legal levels.
UNESCO-IHP collaborated with several institutions in Lebanon, including the American University of Beirut (hydrogeology) and the Remote Sensing Center of the National Council for Scientific Research (groundwater dependent wetlands).

Long-term IWRM strategy development
Lebanon is amidst a long-term IWRM strategy development and action planning process. In 2010, the country was assisted in reviewing its national 10-Year Strategy Plan for Water (2000-2009) in order to launch and advance the process of complementing the Strategy and preparing a national IWRM plan. The review of the 10-Year Strategy Plan was led by the Ministry of Energy and Water and in cooperation with the Ministry of Environment, using the IWRM framework. It tackled a wide range of issues, including water balance, water management, supply and sanitation, irrigation and capacity building while achievements, gaps and deficiencies were also identified. Activities were implemented by GWP-Med in the MED EUWI framework and with its co-contribution.

New Lebanese 'National Water Sector Strategy'
In 2011-2012, GWP-Med provided targeted assistance for the drafting of the new Lebanese 'National Water Sector Strategy', coordinated by the Ministry of Energy and Water. More specifically, the baseline was set and contributions were provided for the Strategy's chapters on institutional settings, legal and regulatory norms, transboundary waters and private sector participation. The latter section was based on and used the findings of the 'Assessment of Private Sector Participation in the Water Sector in Lebanon' elaborated in 2011-2012 and with a special focus on the potential role of banks. The assessment was prepared in consultation and with the active engagement of more than 50 stakeholders from a range of competent governmental and non-governmental entities. In April 2012, the Ministry of Energy and Water launched the National Water Sector Strategy after an elaborate preparation and consultation process that was supported by a range of donors.
Furthermore, in 2012, expert assistance was provided to the ministry to support its role as beneficiary of the application of the Water Evaluation and Planning System (WEAP) model for decision support in six selected river basins and for processing integrated water resources management scenarios produced by an EU MED EUWI service contract.

Management of the Awali river basin and coastal area
The Awali is one of the eight rivers designated by the Ministry of Environment (MOE) as natural sites. Despite the fact that Awali River is one of the least polluted in Lebanon, due to its high water flow, it provides the highest loads of pollution to the Mediterranean, with the exception of bacterial and phosphate loads. A scoping report including a shared vision for the management of the Awali river basin and coastal area in Lebanon was developed to create the basis for the preparation of an appropriately scaled management plan. Works were completed in 2015. The aim is to facilitate the implementation of the ICZM protocol of the Barcelona Convention, incorporating water resources management considerations. The activity

replicates the approach followed for the preparation of the Buna/Bojana plan[7] and makes use of the lessons learned. The scoping report along with the Terms of Reference for a management plan will be used by the Lebanese authorities for making informed decisions regarding the next steps related to the planning in the area beyond the end of the MedPartnership. Activities were implemented under the guidance of the Ministry of Environment and the Ministry of Energy and Water of Lebanon.

Conservation of biological diversity: Implementation of SAP BIO and related NAPs
Collecting data and improving ecological knowledge on marine and coastal biodiversity.
Following the planning and coordination meetings held in 2011 with the representatives of the Lebanese Ministry of Environment, It has been agreed that the MedMPAnet project activities in Lebanon shall be fully harmonized with the relevant achieved, underway or planned projects at country's level. The MedMPAnet project activities were then reoriented towards concrete achievements including field surveys in identified sites along the Lebanese coast, to collect data and improve ecological knowledge on marine and coastal biodiversity.
Thorough studies were conducted in June 2012 and August 2013 in six marine sites, namely Enfeh Peninsula, Ras Chekaa Cliffs, Raoucheh Cliffs, Sidon, Tyre and Naqoura. Inventory of species, mainly of patrimonial and fishing interest, and mapping of benthic habitats were performed.
In 2014, the synthesis report of the ecological characterization of the six studied sites has been finalized, including the outlines of zoning and management proposals. The final version of the synthesis report has been presented during a final presentation workshop held in 18 April 2015 in Beirut, under the patronage of the Minister of Environment of Lebanon.

[7] in Albania and Montenegro

Libya

Libya is a country in the Maghreb region of North Africa bordering the Mediterranean Sea to the north. At 1,770 kilometers (1,100 mi), Libya's coastline is the longest of any African country bordering the Mediterranean. A major environmental concern in Libya is the depletion of underground water as a result of overuse in agricultural developments, causing salinity and sea-water penetration into the coastal aquifers.
Until the civil wars in 2011, Libya was considered one of the last remaining areas of unaffected biodiversity in the Mediterranean Sea. Its coast featured pristine locations, sensitive and vulnerable ecosystems (such as Posidonia oceanica beds and coralligenous beds with one of the last extensive formations of the precious red coral Corallium rubrum), nesting sites of the loggerhead sea turtle Caretta caretta and the leatherback sea turtle Dermochelys coriacea, as well as noteworthy underwater archaeological sites. Pollution problems stemming from unlined septic tanks have also been documented.

To address some of these issues, the MedPartnership project through its executing partners has implemented a number of activities in Libya.

- Gefara Plain desk study by UNESCO-IHP
- Aquifer systems in North-Central and North-Western Libya by UNESCO-IHP
- Ain Al-Ghazala coastal lagoon and its facing Elba Island, and Farwa Lagoon declared Marine Protected Areas by SPA/RAC and WWF-MedPO
- Developing a management plan for Ain-El-Ghazalah and Farwa Lagoon MPAs
- Developing a national strategy for MPA establishment

Integrated Approaches for the Implementation of the SAPs and NAPs: ICZM, IWRM and Management of Coastal Aquifers

UNESCO-IHP and national experts appointed by the MedPartnership countries worked together between 2010 and 2014 on desk studies that formed the basis of regional assessments on (1) the legal, policy and institutional framework for the management of coastal aquifers; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers in the region; and (3) the state of coastal groundwater dependent wetlands and their services.

Gefara Plain desk study

Libya had adopted a comprehensive Water Code (1982); complemented by various legislations related to water resources such as the Environmental Protection Law (2003) and various decrees and decisions by the Council of Ministers. Particular attention is given to water abstraction in specific coastal areas, with severe limitations, or even banning of groundwater abstraction. Water falls under the responsibility of the General Water Authority, with its decentralized branches, along with other ministries.
Forty percent of Libya’s population live in the Gefara Plain on the coast, in an area that represents 1% of the country’s surface area. The study showed that agriculture accounts for the main use of these coastal aquifers, with important quantities of groundwater also extracted for domestic and some industrial uses. Rainfall is less than 100 mm per year in 93% of Libya’s land surface. Intense exploitation has led to seawater intrusion in most coastal aquifers. Irrigation water with increased salinity levels has led to problems with soil salinization and serious effects on the citrus crops in the coastal zone. Furthermore, the water distribution systems are experiencing problems with corrosion to metallic components (pipes, taps,) from increasingly saline water, resulting in increased maintenance costs and potential health hazards from dissolved metals. Pollution problems stemming from unlined septic tanks have also been documented.

Aquifer systems in North-Central and North-Western Libya
The coastal Tawurgha spring and the surrounding sabkha are the main natural outlet of the major aquifer systems in North-Central and North-Western Libya. Apart from its recreational value, the spring water is well controlled and used mainly for irrigating palm groves and other suitable crops. Lined irrigation canals conduct water from the outlet to the adjacent irrigation fields. Future expansion in groundwater abstraction in the southern region will lead to further lowering in pizometric heads and possible changes in chemical composition. Urbanization and intensive irrigation will also impact the ecosystem.
The main partner for UNESCO-IHP in Libya is the General Water Authority.

Conservation of biological diversity: Implementation of SAP BIO and related NAPs

Although exposed to increasing human pressure and exploitation of its resources, the Libyan coast featured in 2008, a near-pristine conservation status. However, no MPAs were officially declared mainly due to a fragmented legal and institutional framework for marine conservation, poor knowledge and understanding of marine biodiversity, and low capacity to design and implement MPAs within relevant authorities.

Ain Al-Ghazala coastal lagoon and its facing Elba Island, and Farwa Lagoon declared Marine Protected Areas
The original objective of the demonstration project in Libya was to assist the Environmental General Authority (EGA) of Libya in the identification of an ecologically representative system of coastal and marine protected areas along the Libyan coast while improving the knowledge and technical capacity of its staff on marine biodiversity assessment and MPA design.
An agreement was established among EGA, MBRC, UNEP/MAP SPA/RAC, IUCNMed, UNDP-Libya, and WWF to collaborate on a joint 4-year work plan for the identification of a system of MPAs along the Libyan coast.
A first marine survey aiming to assess the biological features and the ecological interest of Ain Al-Ghazala marine and coastal area was conducted by SPA/RAC and WWF-MedPO, in September 2010. A team of international and national experts completed the site characterization of Ain-El-Ghazalah MPA by collecting complementary data on the marine biotopes and species, main threats to the marine ecosystem, socio-economic profile of local fishermen and hunters, gear and methods classification and fishery areas. Based on the results of SPA/RAC and WWF-MedPO field surveys undertaken in Ain Al-Ghazala area, the Libyan Ministry of Agriculture, Animal and Marine Wealth declared in January 2011, the Ain Al-Ghazala coastal lagoon and its facing Elba Island, and Farwa Lagoon Marine Protected Areas.
A second survey to assess the marine and coastal ecological features of the El Kouf National Park was conducted, late October 2010, by SPA/RAC and the Conservatoire du Littoral. This assessment was undertaken by more than fifteen Libyan and international experts.

During the course of the project, on-the-job and in-class training sessions were organized on MPA design, underwater biodiversity assessment and socio-economic aspects related to MPA establishment, management planning, sustainable fisheries planning in MPAs, targeting staff of relevant institutions.
Additionally, over 40 practitioners from the relevant authorities and institutions were trained on the use of marine GIS. The work-plan and scope of the management planning process were defined for both project MPAs, the first studies launched and the preliminary participatory workshops/meetings organized.

Developing a management plan for Ain-El-Ghazalah and Farwa Lagoon MPAs
Due to the unstable political context in Libya, the project encountered delays in moving forward. The objective and work plan of the demonstration project had to be revised and adjusted to respond to the new context.
In December 2012, a preliminary meeting was organized with EGA and MBRC representatives to discuss further collaboration. Activities were resumed. Key stakeholders and technical experts were identified and engaged in the planning process of the management plans of Farwa Lagoon and Ain El Gazhela MPAs and a planning team for both project MPAs was established.
A training workshop was organized in support to the MPA management planning process, tailored to local needs and priorities. Steering committees were established and meetings organized on a yearly basis to facilitate the dialogue with decision-makers and seek their approval of the management plans.
In 2013, WWF renewed its commitment to its partners in Libya and together launched the process of developing a management plan for Ain-El-Ghazalah and Farwa Lagoon MPAs, in partnership with the Environmental General Authority (EGA), and the Marine Biological Research Center (MBRC).

Ensuring adequate MPA management capacity within relevant institutions
A set of basic trainings were conducted to build the capacity of Libyan practitioners responsible for MPA management. Through presentations and practical exercises, participants learned the principles of participatory planning and communication, and drafted a road map to engage stakeholders that are key for the future implementation of the MPAs. They assembled a stakeholder list, including small-scale fishermen, hunters, commercial fishermen, sand extractors, aquaculture owners, village heads, local and national administrations and authorities, environmental NGOs, international conservation groups, and universities. The analysis of the specific interests and needs of each stakeholder group allowed managers to plan strategies that can be adopted to work with stakeholders in the future development of the MPAs.

“MPAs are a new concept in Libya—we have opened a door to a new and better way, and there is a feeling that we have started something important”, Hisham Ghmati, Director of Studies, Marine Biology Research Centre, Tajura/Tripoli, Libya

Developing a national strategy for MPA establishment
Libya does not have a specific legislation for protected areas nor a national strategy to develop MPAs and to reinforce stakeholders’ participation. Based on a request by the Libyan Environment General Authority (EGA) with the aim to overcome this legal and institutional gap, several workshops were conducted in 2013 and 2014 in order to elaborate a draft law on Protected Areas. As a result, a draft law was proposed to the Libyan authorities in 2014, to undertake necessary procedure for its adoption. Moreover, and following the same participatory approach, a draft National Strategy for MPA establishment was developed during 2013 and 2014. The resulting strategy is being shared with all the stakeholders for comments and recommendations for final endorsement by EGA.

Montenegro
Montenegro is a small Balkan country with rugged mountains, medieval villages and a narrow strip of beaches along its Adriatic coastline.
The Montenegrin coastal zone is one of the country's most valuable national resources, with high development potential and exceptional natural and cultural values. However, it is subjected to intense pressures from human activities.
One of the key threats to sustainable coastal development in Montenegro is the rapidly growing linear coastal urbanization, which degrades natural, cultural and landscape values and reduces future development opportunities. Significant new construction zones are being planned in current spatial plans, resulting in 46% of the coastline being planned for urbanisation, often in valuable and fragile coastal ecosystems.

To address some of these issues, the MedPartnership project through its executing partners has implemented a number of activities in Montenegro.

- Development of the ICZM Strategy for Montenegro by PAP/RAC
- Buna/Bojana Integrated resource management plan by GWP-MED, PAP/RAC and UNESCO-IHP
- Study on coastal aquifers by UNESCO-IHP
- Establishing new MPAs

Developing the ICZM Strategy
To ensure preservation of the development potential and to restrain growing pressures to the coastal resources, PAP/RAC, in collaboration with the Ministry of Sustainable Development and Tourism developed the ICZM Strategy for Montenegro. Other institutions represented in the Intersectorial Steering Committee, provided important guidance and support towards achieving the goal including the Ministry of Culture, Ministry of Agriculture and Rural Development, Ministry of Economy, Ministry of Foreign Affairs and European Integrations, Ministry of Transport and Maritime Affairs, PE Morsko Dobro and local municipalities.
A number of technical and expert institutions and individuals helped the overall achievement of the process with their inputs through participation to the workshops and direct inputs to the documents significantly. The national ICZM strategy was officially adopted by the Government of Montenegro on June 25 2015, thus being the first national legal strategic document prepared following the requirements of the ICZM Protocol.

Creating synergy between the ICZM strategy CAMP Montenegro and the Coastal Area Spatial Plan.
The preparation of the ICZM Strategy for Montenegro went in parallel with the process of preparation of the Coastal Area Spatial Plan, which is the most important planning document for this relatively small coastal zone (with a nearly 300 km long coastline and the total surface of 1,591 km^2; internal waters and the territorial sea with the surface of around 2,500 km^2).
Taking into consideration the increasing need to incorporate the ICZM principles in the planning documents, the ICZM Strategy for Montenegro gave specific guidelines related to criteria for the sustainable land-use planning within the Coastal Area Spatial Plan were elaborated.
In parallel to this process, synergy was also built with UNEP/MAP CAMP Montenegro, which enabled the strategy to gain strong political support and commitment.
Overall, such integrated action practically resulted in significant reduction of planned urbanisation in the coastal zone, introduction of 100-meter coastal setback and establishment of an inter-ministerial committee entrusted with ICZM coordination. Such coordinated effort initiated the reformed approach for coastal planning and management. It enabled the adoption

of a new integrated management policy and initiated significant changes in important national legislation. Built capacities of public administration and professional institutions, especially those in the spatial planning sector, were among the important effects of the process.

Integrated Resource Management Plan for Buna/Bojana Area

The Bojana/Buna area is a single natural system extending into Albania and Montenegro with transboundary issues and problems. The Buna/Bojana River, its catchment, the underlying aquifers and coastal waters provide the common physical threads linking the two countries. Albania has adopted a new water law in December 2013. The new law fully complies with the provisions of the EU Water Framework Directive, giving consideration for groundwater but not for coastal aquifers. The main authorities cooperating within the activity were Ministry of Sustainable Development and Tourism in Montenegro and Ministry of Environment in Albania.
The transboundary 'Integrated Resource Management Plan for Buna/Bojana Area' was developed by PAP/RAC, GWP-Med and UNESCO IHP, to assist Albania and Montenegro to sustainably manage the natural and anthropogenic environment in the Buna/Bojana basin and coastal area. The plan was developed and refined based on the guidelines of both the ICZM Protocol and the EU's Water Framework Directive.
The plan proposes measures at the national and transboundary levels for addressing the area's main issues. It provides a basis for transboundary coordination that at present is largely ad-hoc, and considers impacts on the coastal zone and the river basin of upstream activities from the impacts of agriculture, tourism and urbanisation, and marine impacts on the river delta and coastal aquifers.

Furthermore, UNESCO-IHP contributed with the analysis of the hydrogeological setting of the Plan Area, conducted in cooperation with the Geological Surveys of Albania and Montenegro. This work led to the first-ever joint hydrogeological map of the Buna/Bojana area, providing a valuable tool for natural resource managers in both Albania and Montenegro as it indicates the hydrogeological characteristics of the zone along with information about locations of springs, wells and groundwater pumping stations.
The Plan was developed over a 5-year timeframe and completed in 2015. To structure the analysis of the complex interplay between topic areas, the "DPSIR" framework was used. This multi-sectoral approach results with the measures to improve spatial planning, including the economy, water quality, land, flood and waste management, to increase resilience to climate change and to maintain biodiversity. In addition, the Plan identifies potential transboundary governance structures to deliver it.
The Management Plan was a pilot application of the 'Integrative Methodological Framework (IMF) for coastal, river basin and aquifer management'. The development of the plan draw extensively on the guidelines of both the ICZM Protocol of the Barcelona Convention and the EU's Water Framework Directive; being both incorporated in the legal frameworks of the two countries, the Management Plan forms an instrument for their application. The Ministry of Sustainable Development and Tourism in Montenegro and Ministry of Environment in Albania were the lead authorities.
As part of the Plan's elaboration, GWP-Med further conducted a detailed Stakeholders Analysis and a Characterization of the Buna/Bojana basin in accordance to the Water Framework Directive.

Coastal aquifers in Montenegro

UNESCO-IHP and national experts from Montenegro worked together between 2010 and 2014 on desk studies that formed the basis of regional synthesis on (1) an analysis of the legal, policy and institutional framework for groundwater management ; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the

main coastal aquifers; and (3) the state of coastal groundwater dependent wetlands and their services.

In the preparation of the Water Law (Official Gazette of the Republic of Montenegro, No 27/2007) an effort was made to harmonize its provisions with the EU Water Framework Directive 2000/60/EC (WFD). Preparation of by-laws for the implementation of the Law and for further transposition of relevant EU Directives such as the Groundwater Directives (2006/118/EC), Bathing Waters (2006/7/EC), Nitrates Directive (91/676/EEC), and others are under way. The Ministry of Agriculture and Rural Development has general competence over the management of water resources along with other ministries and authorities. A *Water Council* was established according to the Water Law to provide advice in preparing regulations.

Montenegro has two coastal aquifers, the Bojana aquifer and the Boka Bay aquifer. It is estimated that these aquifers discharge approximately 2,500 Mm3/yr to the Adriatic. Groundwater from these aquifers is used for domestic and agricultural activities. Seawater intrusion is the major problem in these aquifers, resulting from over extraction of groundwater for use by growing coastal populations that include a significant number of tourists in summer months. Other significant threats to the quality of coastal groundwater include the discharge of untreated domestic wastewater through submarine outfalls and intense urban development on the coast.
Skadar Lake is a Ramsar site and a Natural reserve (the lake is transboundary between Montenegro and Albania). The lake is fed by surface (Bojana river) and groundwater. The region is subject to deforestation, extensive agriculture and urbanization. It receives urban wastewater, and excess of irrigation water. These also represent pollution sources.
Another coastal Ramsar site and Natural reserve is Tivatska solila, which is an important resting and feeding area for migratory birds, fed by surface and groundwater. The wetland is subject to deforestation; urbanization; and construction of roads, and suffers from agricultural, urban and industrial pollution. The main impact is increased erosion and soil destruction.

Conservation of biological diversity: Implementation of SAP BIO and related NAPs

Establishing new MPAs
In Montenegro, rapid assessments were undertaken along the Montenegrin coast, in 2011 and 2012, in close collaboration with the Ministry of Environment of Montenegro and with the involvement of national experts from the Institute of Marine Biology of Kotor and the Nautilus local NGO, as well as international experts. A synthesis report for the valuation of marine areas, in particular the best sites to become MPAs, including GIS-based mapping has been finalized in November 2012.

Further to this preliminary step, Boka Kotorska Bay was selected as a pilot site. A fishery study and an ecological survey using the side scan sonar technique were carried out in the Kotor Bay marine area. The collected data contributed to the establishment of a GIS database that also served the purpose of CAMP Montenegro project.
Furthermore, SPA/RAC has joined efforts to PAP/RAC and SCP/RAC in implementing a pilot project on testing the Ecosystem Approach (EcAp) in Boka Kotorska Bay. In this regard, the report on marine biodiversity status of Boka Kotorska was finalized in September 2014, and endorsed by the Montenegrin environmental authorities. A feasibility study on ecotourism, aiming at encouraging the development of green entrepreneurship, was also elaborated and presented during a public consultation workshop held in February 2014. It was finalized and endorsed by Montenegrin environmental authorities in September 2014.

On the other hand, SPA/RAC made an extensive analysis of the existing legal and institutional frameworks in Montenegro, in close collaboration with IUCN-Med. The report on the "Legal and institutional framework assessment for conservation of coastal and marine biodiversity and the establishment of MPA in Montenegro" has been endorsed by the Montenegrin environmental authorities in November 2014, in both Montenegrin and English languages.

Morocco

Morocco is situated in the Maghreb region of North Africa. It has a coast by the Atlantic Ocean that reaches past the Strait of Gibraltar into the Mediterranean Sea, and is known for its biodiversity. Groundwater discharges to the Mediterranean are estimated at 20 Mm3/yr. Dense coastal populations drive coastal aquifer degradation, which is compounded by lack of wastewater treatment plants, unregulated use for irrigation, in addition to the use of fertilizers. Salinization, often beyond the limits for irrigation, is generalized and mostly linked to excessive extractions and continuing use for irrigation.

To address some of these issues, the MedPartnership project through its executing partners has implemented a number of activities in Morocco.

- Bou Areg Lagoon Coastal aquifer by UNESCO-IHP
- MED TEST by UNIDO
- Cap des Trois Fourches declared MPA by SPA/RAC
- Developing the capacity of the small-scale fishing communities in al Hoceima National Park by FAO

Integrated approaches for the implementation of the SAPs and NAPs: ICZM, IWRM and management of costal aquifers.

UNESCO-IHP and national experts from Morocco worked together between 2010 and 2014 on desk studies that formed the basis of regional synthesis on (1) an analysis of the legal, policy and institutional framework for groundwater management ; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers; and (3) the state of coastal groundwater dependent wetlands and their services.
Morocco adopted a water law n°10-95 (1995) with the objectives to promote the sustainable management of water resources by basin. It also introduces modern principles such as integrated management, user-pay or polluter-pay. The water law has given a rather comprehensive framework to the water sector. However its adoption has left gaps in such issues such as management of droughts and floods, recovery of water tariffs, sanitation, wastewater throwing to the sea and desalination. The water law is currently under revision.
Morocco is experiencing the “contrats de nappe” which are progressively being established on specific aquifers.
Whereas a Ministry in charge of water resources and other ministries are also in charge, nine basin agencies were established on the territory with wide competencies for surface but also for groundwater, such as delivering the authorizations and concessions for groundwater abstraction.

Bou Areg Lagoon Coastal aquifer

Moroccan coastal aquifers are relatively small (<300 km^2), but are important for the local rural economy and constitute a water source mainly for agricultural activities, but also for local domestic water supply and industry. A complete assessment of human impacts on groundwater quality using multi-tracer hydrogeochemical techniques permitted to determine that the Bou-Areg aquifer is characterized by a high natural salinity, increased by the effects of agricultural activities through irrigation return flows (more details in the Regional part).
The Bou Areg Lagoon (Ramsar site and natural reserve) is located around the city of Nador. It is an outlet of the Bou Areg Aquifer system. The equilibrium of the wetland depends highly on groundwater flow and on the connection with the Mediterranean Sea. The wetland is threatened by growing urbanization, over-exploitation of the aquifer and extraction of building materials. A National Agency for the Development of the Marchica lagoon (Bou Areg) was established for the integrated development of the area.

Another Ramsar site and Natural reserve is the Oued Laou estuary (Martil municipality) dependent on groundwater flow as well. The wetland is impacted by groundwater exploitation (mainly for crops), and by urban, industrial and agricultural pollution.
The Oued Moulouya estuary located in Berkane, is a groundwater discharge area, and is also classified as Ramsar site and as natural reserve. Its water quality is impacted highly by urban and industrial point source pollution, and in a moderate manner by agriculture.
Close cooperation was established with the University of Cadi Ayyad (Marrakesh) for the activity on coastal wetlands.

Facilitation of policy and legislative reforms for SAP-MED
Transfer of Environmentally Sound Technology in the South Mediterranean Region
Morocco's core economy relies on Small and Medium Enterprises (SMEs), which gather about 93% of the industrial activities and employ over 40 percent of the work force. The main industrial sectors are the Chemical sector, Agro Food processing, Textile and Leather, Mechanics and Metallurgy, Electronics and Electrics. High energy costs represented a major drive to implement TEST for local industry.

MED TEST has targeted 12 companies in Morocco, mostly SMEs, within several industrial sectors located in the geographical areas of Tangier and Tetouan, the Mediterranean hot spots. The twelve demonstration companies adhered to MED TEST and were assisted in identifying feasible opportunities for cutting production costs, increasing productivity, valorizing waste into by-products as well as reducing pollution loads and therefore the investment and operating cost of future wastewater treatment plants. The companies received training and technical assistance for the EMS preparation, fully integrating resource efficiency principles in line with the identified measures.

The project was implemented with the local support of the Moroccan Cleaner Production Centre (CMPP) and the assistance of ECTI (Echanges et Consultations Techniques Internationales (ECTI). The Ministry of Industry, Ministry of Environment, Moroccan Confederation of Enterprises (CGEM), Water Basin Authority Tangier, and the Italian Embassy in Morocco were the institutional stakeholders of the project.

Company	Size (*)	Investments [USD/yr]	Savings [USD/yr]	Water Savings [%]	Energy Savings [%]
Food Sector					
Fromagerie BEL (dairy)	500	280,328	333,830	20	7
Colainord (dairy)	600	117,929	381,436	23	13
Cumarex (fish)	320	1,252,565	3,943,800	10	20
Conserverie des 2 Mers (fish)	350	120,175	73,970	22	65
Boyauderie de l'Atlas (meat)	320	79,125	133,500	48	26
Textile Sector, Finishing					
Ecolorentel	400	324,327	242,041	4	7
Lavesma	300	250,911	474,615	2	27
Metal Sector					
Aluminium du Maroc	200	262,164	370,431	7	11
Industube	90	85,800	327,375	1	12
Ceramic Sector					
Ghorghiz	200	347,583	433,180	80	4
Ceramica Dersa	50	87,125	205,306	80	12
TOTAL		**4,228,231**	**5,899,267**		

(*) n. of employees, 2009

Conservation of biological diversity: Implementation of SAP BIO and related NAPs
Cap des Trois Fourches declared MPA

Following the signature of a Memorandum of Understanding between SPA/RAC and the "Haut Commissariat aux Eaux et Forêts et à la Lutte contre la Désertification" (HCEFLD), a valuation of marine areas along the Moroccan Mediterranean coast, including GIS-based mapping, was carried out to select the best areas suitable to be declared as MPAs. A synthesis report on that valuation was approved in 2012.

Following the above-mentioned valuation, the Cap des Trois Fourches situated in the Northern Moroccan coast near the Nador area, was identified as the main intervention site to be comprehensively surveyed within the framework of the MedMPAnet project.

On-site ecological and socio- economic surveys have been carried out in September 2012 and September 2013 at the Cap des Trois Fourches area. They allowed running natural habitats assessment of the site along with the elaboration of recommendations for its management.

Following the 2012-2013 ecological and socio- economic characterization, a process aiming at the elaboration of a management plan of the marine and coastal area of the Cap des Trois Fourches was launched in June 2014. This process is being run based on a participatory approach with the local stakeholders. In April 2015, the zoning proposal, the proposed management actions and programmes and the mechanisms of local stakeholders' participation and involvement in the creation and management of the future MPA of the Cap des Trois Fourches was discussed with the local stakeholders in Nador.

Besides, a business plan for the Cap des Trois Fourches area is being developed in order to assure financial sustainability for the future MPA.

The final presentation and consultation workshop on the management plan of the Cap des Trois Fourches marine and coastal area was planned for September 2015.

Developing the capacity of the small-scale fishing communities in al Hoceima National Park

Intensive training was organized in the framework of the activities linked to the participation of small-scale fishers in the monitoring and management of fisheries inside a marine protected area, in Al Hoceima National Park, in Morocco. Activities were carried out in a close cooperation with the CopeMed project, the main FAO Fisheries Management Support project for the Western Mediterranean, and the National Moroccan institution with the mandate to manage fisheries, the "Institut National pour la Recherche Halieutique" (INRH). The main focus was on developing the capacity of the small-scale fishing communities for monitoring the small-scale fishing activity, including harmful practices like fishing with dynamite or poison. However, given that the people to train were fishers, with little interest and time for a type of classroom training, activities were mostly on-the-job training. The training targeted four small-scale fishing communities with more than 100 fishers, inside the Al-Hoceima National Park. Community members were trained as fisheries samplers and data collectors. The staff of INRH dealing directly with the project developed strongly their capacity for communicating and working together with the fishing communities.

The project contributed to building the capacities of fishers in monitoring their fisheries and interpreting the data that arise from it. It also changed mindsets and improved the relations between the actors in the Al-Hoceima National Park namely the fishing communities, and the Park and Fisheries administrations. The plan is to extend this experience to other areas in Morocco.

Syria

Syria is a country in Western Asia. It consists mostly of arid plateau, although the northwest part of the country bordering the Mediterranean is fairly green. Major environmental issues in Syria include deforestation, overgrazing, soil erosion, desertification, water pollution from the dumping of raw sewage and wastes from petroleum refining, and inadequate supplies of potable water.

Water shortages, exacerbated by population growth, industrial expansion, and water pollution, are a significant long-term constraint on economic development.

The challenging security situation in Syria led to reformulate the originally planned demonstration projects. Syria has however participated in most regional activities of the project.

To address key environment issues MedPartnership implemented a number of activities including:

- A desk study on the state of the coastal groundwater dependent wetland of Akkar plain by UNESCO-IHP.
- Environmentally sound management of lead batteries by MEDPOL.

Integrated Approaches for the Implementation of the SAPs and NAPs: ICZM, IWRM and Management of Coastal Aquifers

State of the coastal groundwater dependent wetland of Akkar plain

UNESCO-IHP and national experts appointed by the MedPartnership countries worked together between 2010 and 2014 on desk studies that formed the basis of regional assessments on (1) the legal, policy and institutional framework for the management of coastal aquifers; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers in the region; and (3) the state of coastal groundwater dependent wetlands and their services.

These efforts –along with the results of case studies – have enabled UNESCO-IHP to establish a baseline on coastal aquifers and reach a consensus with the participating countries on the priority actions for future interventions to protect and conserve coastal groundwater resources in the Mediterranean.

UNESCO-IHP and a national expert from Syria collaborated between 2013 and 2014 on a desk study on the state of a coastal groundwater dependent wetland, the Akkar plain, and its services.

The Akkar plain wetland is located in the municipality of Tartous, and does not fall under any special protection framework. The wetland offers various services such cropping, livestock, fruits, or supply of good quality water. It is subject to intensive agriculture exploitation, urbanization and construction of roads, which are also sources of pollution along with industries. These developments are leading to an alteration of biochemical cycles and native species extinction.

Facilitation of policy and legislation reforms for pollution reduction

Environmentally sound management of lead batteries in the Syrian Arab Republic Pilot project.

The demonstration project on recycling of lead batteries in Syria aims to improve the legislative and institutional framework for the recycling of lead batteries; to prepare and implement a project on organizing a system for recycling lead batteries; and transfer the gained know-how and the expertise on the lead batteries recycling to other countries.

The conclusions from the project showed that the management of used lead batteries is mostly organized by the private sector, i.e. numerous car maintenance workshops and small lead smelting foundries which operate without having obtained any environmental permit. As a consequence, the conditions concerning the environmentally sound management of these

wastes are not met. Authorities face difficulties to track these operations as they involve many small collectors and recyclers who are difficult to locate and control. Some major issues of policy reform are needed for the Environmentally Sound Management (ESM) of lead batteries in Syria. These include building up institutional capacities, improving the whole chain of batteries management (collection, transport, storage, treatment/recycling) and setting requirements for the creation of a national market for recycled products.

The final report on environmentally sound management of lead batteries in the Syrian Arab Republic: Proposals for policy reforms, was prepared. The report includes an assessment of the situation in the region (existing environmental legislation, management systems for batteries' collection, treatment/recycling and the role/responsibilities of state institutions) and proposals for policy/ institutional/ organizational arrangements necessary for the improvement of the existing situation.

The next step included the development of practical guidelines for the environmentally sound management of used lead batteries based on Syria's experience and on the Basel Convention guidelines and their dissemination to other countries of the project.

Tunisia
Tunisia is the smallest country in North Africa and is situated on its Mediterranean coast, midway between the Atlantic Ocean and the Nile Delta. An abrupt southward turn of the Mediterranean coast in northern Tunisia gives the country two distinctive Mediterranean coasts, west-east in the north, and north-south in the east
Despite its relatively small size, Tunisia has great environmental diversity. Tunisia has a coastline 1700 kilometers.

Tunisia features a wide diversity of habitats and ecosystems that translates into impressive biodiversity. Located in the southern Mediterranean basin, the country is at the crossroads of ancient civilizations that exist throughout the basin: various exchanges and introductions that have occurred over time have enriched the country's species diversity, particularly along its coasts[8].

The industrial sector in Tunisia essentially consists of small and medium enterprises (SME), most of which belong to the private sector while the role of the public sector is limited to heavy, extractive or transformation processing industries. The main areas affected by industrial pollution within the Mediterranean Sea hot spots are Tunis, Sfax, Ariana, Bizerte, Sousse, Nabeul, and Gabes.

To address some of these issues, the MedPartnership project through its executing partners has implemented a number of activities in Tunisia.

- Tunisian wetlands case study by UNESCO-IHP
- National Policy dialogue activities on IWRM by GWP-Med
- MED TEST by UNIDO
- Establishment of the management unit of the Cap Negro-Cap Serrat MPA by WWF
- Development of the future MPA of Kuriat Islands by SPA/RAc
- Integration of Climatic Variability and Change into National Strategies to Implement the ICZM Protocol by University of Geneva / GRID-Geneva, PAP/RAC, Plan Bleu and GWP-Med

Integrated Approaches for the Implementation of the SAPs and NAPs: ICZM, IWRM and Management of Coastal Aquifers

Tunisian wetlands case study
UNESCO-IHP and national experts from Tunisia worked together between 2010 and 2014 on desk studies that formed the basis of regional synthesis on (1) an analysis of the legal, policy and institutional framework for groundwater management; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers; and (3) the state of coastal groundwater dependent wetlands and their services.

Tunisia had adopted a Water Code with rather comprehensive provisions and giving due consideration to groundwater. The water Code was revised during the year 2014 and its adoption was expected in 2015. This water code includes consideration of the impact of climate change on water resources and ecological uses such as wetlands. The Ministry in charge of Environment is elaborating the environment code. This code deals with the sustainability and the preservation of groundwater. It is still under discussion and it will be implemented once adopted by stakeholders**.**

[8] Tunisia Country profile, Convention on Biological Diversity, 2015

Coastal aquifers cover nearly 25,000 km2 of Tunisia's territory (nearly 15% of the total area of the country), and provide a source of groundwater mainly for agricultural activities. About half of all shallow coastal aquifers are characterized as overextracted. Problems with sea water intrusion and reduced borehole yields are widespread and severe.

Groundwater plays an important role in sustaining the Ramsar-listed Korba wetland in Tunisia, one of the most important humid zones in the eastern region of the Cap-Bon peninsula due to its use by major migratory birds as a traditional stopover site. The wetland provides a wide range of services ranging from livestock and fisheries, to natural species of medicinal interest, or tourism, and local cultural identity and knowledge. The hydrological concerns are linked to the gradual filling of the inlet and accumulation of sediment that reduces water flow. The wetland is affected by pollution from urban, industrial and agriculture activities, as well as by increased erosion and soil destruction.

Furthermore, UNESCO-IHP collaborated closely with the Tunisian Ministry of Environment and Ministry of Agriculture (Bureau of Inventories and Hydraulic Research (BIRH) at the Department of Water Resources (DGRE)) on a case study undertaken at the Ghar El Melh coastal aquifer to assess and map the vulnerability of this coastal aquifer to seawater intrusion and also pollution from land-based activities. Additional groundwater expertise was provided by the Centre for Research and Water Technologies (CERTE).

National Policy dialogue activities on IWRM

IWRM principles are the long-term driver of water resources management in Tunisia, with the government being committed towards policy and institutional reforms. A number of national policy dialogue activities on IWRM issues were carried out between 2012 and 2014, with emphasis on the water governance and financing nexus. They were implemented by GWP-Med, in synergy with OECD, under the lead of the Ministry of Agriculture, Hydraulic Resources and Fisheries and in cooperation with the Ministry of Environment. Around 65 representatives from government authorities, utilities, civil society, academia, private sector and the donor community, were engaged in a debate on public policies and institutional development for water as well as for private sector participation in the provision of water services including for environmental protection objectives. Solid technical work, based on tested OECD methodology, supported and provided background to the structured dialogue on water governance and financing. A number of multi-stakeholder workshops and other consultation meetings were organized. The step-by-step findings were fed into the preparatory process of the Tunisian National Water Strategy 2050. Furthermore, they provided input to the preparation of the Water Article in the new Constitution of Tunisia. In addition, administrative assistance was provided for the coordination of technical and financial partners in the country on on-going and upcoming water projects. Works faced implementation obstacles and delays due to the Revolution, and had to adjust and prioritize activities according to developments.

Transfer of Environmental Sound Technology in the South Mediterranean Region—(MED TEST)

MED TEST has targeted 3 industrial sectors in Tunisia, textile, agro food and leather, which are crucial for the country's economy and rank among the major contributors to industrial pollution generation in terms of wastewater, organic loads and toxic substances release, as well as water and energy usage.

A total of 15 companies, out of a group of 50 initially contacted, decided to join MED TEST in a voluntary base providing cash co-financing.

The assessments conducted at these companies revealed a consistent gap between actual industry performance and international sector best practices, which indicated a high potential for resource efficiency in Tunisian industry. It was demonstrated that the introduction of best practices would enable to reduce this gap, leading to the adoption of action plans and investment programmes in each company.
During the course of the demonstration projects, companies received assistance to integrate resource efficiency into existing management systems and to adopt international environmental management standards.

The project was implemented with the local support of a consortium of three technical centres affiliated to the Ministry of Industry, namely: CETTEX, textile; CTAA, agribusiness; and CNCC, leather, and in full coordination with institutional stakeholders: Ministry of Industry, Energy and Small Medium Enterprises: industrial strategy unit and modernization bureau, National Agency for Environmental Protection (ANPE); UTICA, industrial association and the Italian Embassy in Tunisia.

The table below provides a summary of financial figures and water/energy savings associated to the identified measures in the demonstration companies.

Company	Size (*)	Investments [USD/yr]	Savings [USD/yr]	Water Savings [%]	Energy Savings [%]
Food & Beverage Sector					
Générale Industrielle Alimentaires Slama (GIAS)	493	191,200	133,700	12	17
Société de Conserves Alimentaires du Cap Bon	50-250	98,139	73,639	44	9
Tunisie Lait	308	827,410	746,638	16	13
Société de Boissons du Cap-Bon (SBC)	119	56,331	75,454	22	21
Societè Nouvelle de Boisons (SNB)	202	29,200	194,600	12	14
Centrale Latiere du Cap nord (CLC)	547	484,945	546,903	13	19
Textile Sector, Finishing					
Teinturerie et Finissage Mediterraneenne (TFM)	55	1,264,645	491,860	56	10
Gartex	185	76,200	67,200	19	15
Megastone	150	76,500	55,600	10	30
Traitex	60	181,800	111,836	19	39
Garment Dyeing Service	80	139,000	91,300	24	7
Star Wash	40	37,500	28,000	30	14
Leather Sector, Tanneries					
Tanneries Megisserie du Maghreb (TMM)	180	523,000	446,800	14	15
Société Moderne des Cuirs et Peaux (SMCP)	35	287,000	97,200	22	3
Tannerie du Nord Utique (TNU)	50	184,000	125,000	8	70
TOTAL		4,456,870	3,286,530		

(*) n. of employees, 2009

Phosphogypsum slurry management project in the Gulf of Gabes.
Two studies addressing the Management of Phospohogypsum sludge and Fertilizer industry in Tunisia were developed in 2013 and 2015. The Guide for the good management practices of Phoshogypsum was prepared and reviewed in a national workshop associated with proposal for regulatory framework improvement and implementation of short term and long term solutions.
A national capacity building workshop on good practices for the sustainable management of Phosphogypsum Slurry in Tunisia including a training component was held in 2015 with the participation of different stakeholders including governmental organizations, industrial sector, NGOs, academics and researchers.
Five national experts from National Agency for Environmental protection and Tunisian Chemical Group held a mission for experience exchange on best practices for managing phosphogypsum sludge to Ardaman & Associates Corporate in Orlando, Florida, USA. The mission included safety orientation, corporate laboratory tour, meeting with Ardaman engineers, field visit to an active Phosphogypsum stack (Mosaic), meeting with Florida Industrial and Phosphate Research Institute, meeting with Florida Department of Environmental Protection Phosphogypsum Program, and field visit to a closed gypsum stack facility (Mulberry).

Establishment of the management unit of the Cap Negro-Cap Serrat MPA, development of its Business Plan and identification of sustainable financial mechanism for MPAs
Located in the Kroumirie-Mogods region (northwest Tunisia), Cap Négro-Cap Serrat coastal and marine area is one of the priority areas for conservation identified under the Tunisian National Strategy for Marine Protected Areas. This area is one of the most rural regions of the country, where local communities still largely depend for their living on natural resources. In recent years, due to overgrazing and overfishing, the population has experienced lower income,

which was further aggravated by the revolution in 2011 and its aftermaths.

As in other North African countries, the lack of an adequate legal framework to regulate the designation and protection of marine protected areas (MPAs) in Tunisia has hampered their effective implementation for many years. In 2009, a law on Marine and Coastal Protected Areas (MCPA) in Tunisia was finally approved and a number of MPAs are expected to be gazetted in the near future. Most of these MPAs are islands and archipelagos, despite growing pressure on coastal areas. Moreover, the existing MPAs rely heavily on foreign funds for their management and are still without a clear division of responsibilities between ministries and administrations for the management of their marine and coastal zones.
Within the MedPartnership project, WWF has worked alongside relevant authorities and administrations to have a permanent and functional management structure in the marine and coastal area of Cap Négro - Cap Serrat, while awaiting for its official declaration as MCPA under the Tunisia legislation, and ensure the financial framework to sustainably manage this area. As Cap Négro - Cap Serrat includes both terrestrial and marine areas, the project partnered with the relevant marine, coastal, forestry and agriculture institutions.
WWF worked with official authorities as well as associations active in the field. These include: Agence de Protection et d'Aménagement du Littoral (APAL), Direction Générale des Forêts (DGF); Commissariat Régional au Développement Agricole de Beja (CRDA); Office national du tourisme tunisien (ONTT), Commissariat régional du tourisme, Tabarka; Commissariat régional du tourisme, Bizerte; Direction régionale de l'Enseignement de Baja et de Bizerte; Commissariats de développement agricole de Beja et Bizerte; Direction générale de la pêche et de l'aquaculture (DPA); Association de développement local de Sejnene; Association de développement local de Nefza; Groupement de développement agricole et de pêche El Moustakbal.

In 2012 WWF commitment was renewed to further sustain the emerging Tunisian conservation community (environmental NGOs, CSOs, etc.) and support nature-dependent sectors to adopt sustainable practices and improve local economies, particularly in the Cap Negro and Cap Serrat area. As new laws are being drafted, WWF will also direct its efforts towards ensuring that local NGOs have the capacity to influence environmental policies and inform the development of a new environmental agenda for Tunisia.

Engaging women in MPAs promotion
The population of the Kroumirie-Mogods region highly depends on artisanal fisheries and agriculture of subsistence. Concerns were therefore voiced about future fishery restrictions following the official declaration of the Cap Négro - Cap Serrat MCPA.
To resolve these issues, women from the local community, who traditionally play an important role in rural natural resource management, were engaged as spokespersons. A day-trip in Cap Négro - Cap Serrat MCPA were organized for a Tunis hiking club, and a traditional breakfast prepared by local women was offered to visitors. This visit was important to show the benefits and opportunities to the local economy through the promotion of sustainable tourism activities in the MCPA.

Development of the future MPA of Kuriat Islands
The demonstration project in Tunisia, aims at the inception, planning, zoning and development of the future MPA of Kuriat Islands, located at the Eastern Tunisian coast.
Two surveys to assess the marine biological features of the Kuriat Islands have been undertaken respectively in 2010 and 2011. Barrier reefs of Posidonia oceanica, maerl banks and other marine biocenosis were characterized and mapped. This allowed also the design of a

preliminary zoning for the area and the delivery of on-job training for local experts. A socio-economic study was undertaken on the area during the first half of 2012.
Based on the results of the above-mentioned field surveys and the socio-economic study, the activity aiming at the elaboration of a management plan for the Kuriat Islands and the setting-up of a consultation mechanism involving all stakeholders, have been launched in 2013, in close collaboration with the Tunisian Coastal Protection and Planning Agency (APAL).

Workshop were organized for consultation with local stakeholders and discussion of the zoning and management programme proposal. Based on the results of these workshops, a management plan was prepared, and was endorsed by the concerned stakeholders.

The MedMPAnet project has completed its activities in Tunisia. However, the Tunisian Coastal Protection and Planning Agency (APAL) took rapidly action and built on the project achievements: a meeting with key stakeholders was organized and led to set up the future MPA local steering committee.
On the other hand, a replication activity aiming at initiating the establishment of a new MPA in Tunisia will be carried out by SPA/RAC. It consists in running the ecological and socio-economic studies in view of the creation of an MPA in the North-Eastern part of Kerkennah Islands. A recent meeting with the Tunisian Coastal Protection and Planning Agency allowed identifying the relevant actors to take part of the fieldwork of the ecological, socio-economic and stakeholders' studies, and to delimit the study area. The fieldwork of the ecological assessment in the Kerkennah islands started in July 2015, with a comprehensive team of experts and scientists.

Integration of Climatic Variability and Change into National Strategies to Implement the ICZM Protocol
The coastline of Tunisia is more than 1,700 km long, including the continental part and the islands, with a variety of coastal types. Its coastal wetlands, which are located at a very low level, are of particular concern. The first results of the DIVA model confirmed the vulnerability trends identified by the Tunisian experts studying the impacts of the sea-level rise. These effects will be significant across the century, and adaptation measures are urgently needed.
Tunisian coast was segmented to a total of 564 segments. The area of Tunisian coastal zone exposed to the 1-in-100 year coastal extreme water level will increase from the current 443 km2 and 304.732 expected people flooded annually to 436,000 in 2100 and the expected annual damages from USD 6.8 billion today to 22.1 billion per year in 2100. Erosion will mostly affect the municipalities of Nabeul, Sousse, Medinine and Bizerte, around a third of the Tunisian coastline consists of erodible beaches. The final results show that without adaptation (beach nourishment) in 2100 would cost about USD 43.82 million annually and up to 7,2 km ² of sand..
An evaluation of CVC impacts per key economic sectors in coastal zones was undertaken to complete the results of the DIVA model. The study aimed at providing additional food for discussion at the national level, and helped raise awareness on the need to integrate CVC issues in the ICZM processes. This specific exercise principally aimed to valorize local and available data, to put them in perspective with international data and recognize CVC scenarios (E.G. IPCC 5) worldwide in order to propose some adaptation measures. Results were obtained for the following key economic sectors: agriculture, fisheries, tourism, forests, health and energy. Adaptation measures were not included, but the report pointed out the lack of quantitative analysis and studies available, and some key sectors where updating of data is needed, e.g. regarding the water resource and energy consumption.

The archipelagos of Kerkennah

The Islands of the Kerkennah archipelago are under several threats such as: coastal and soil erosion, degradation of the marine ecosystems, overfishing and illegal fishing practices (bottom trawling), soil salinization, sand mining, land pollution from poor waste management and invasive marine species. The additional threats from climate change will exacerbate coastal erosion, salinization and pose additional pressure on water supply and agriculture. The consultation confirmed those threats and flagged several solutions.

The purpose of this pilot study was to initiate an Ecosystem-based Approach to assess if this can be used to mitigate impacts of climate change. Kerkennah is a laboratory for environmental issues: coastal erosion, sand mining, overfishing, poaching, salinization, waste and plastic litters, decline of palm trees, all of this will be exacerbated by climate change, especially sea level rise and increase of wave energy.

The scientific assessment was conducted by the University of Geneva / GRID-Geneva in collaboration with the Tunisian Agence de Protection et d'Aménagement du Littoral (APAL). The team also collaborated with Plan Bleu and GWP-Med on local consultation processes. It was carried out with remote sensing and GIS techniques along a ground mission which was carried out on the Kerkennah archipelago to validate the results of the analysis. It highlighted a 3-fold increase in the number of fishing infrastructures and delineated a change in sea grass distribution/composition and confirmed the development of alga. A population distribution map was produced showing that a significant number of houses are located in potentially inundated areas.
The main output of this study is a centralisation of existing data and studies. GRID-Geneva has gathered a significant amount of data. This data have been compiled, prepared and included into a GIS.A geonode was created (see http://kerkennah.grid.unep.ch/) that allows users to see all the data collected through and produced by this study. The Geonode will be transmitted to APAL so that all users can access the data.

To face these challenges, new environmental governance, education programmes and actions to improve infrastructures and law enforcements are needed.
Kerkennah has great potential as a touristic destination. However the waste management issue as well as water limitations and building material sources need to be addressed.

Turkey

Largely located in Western Asia, with the smaller portion in Southeast Europe, Turkey is encircled by seas on three sides: the Aegean Sea to the west, the Black Sea to the north and the Mediterranean to the south. Turkey's location at the crossroads of Europe and Asia makes it a country of significant geostrategic importance.
The country, is not water rich as often presumed, and projections for 2023 indicate increased water demands for growing human populations and intensified industrial and agricultural activities as well as tourism in coastal areas. Like many countries in the region, Turkey's coastal aquifers are subject to pollution from agricultural activities (pesticides and fertilizers), discharge of untreated wastewater and seawater intrusion.
The relatively long coastline features an abundant, highly diverse and globally significant biodiversity endowment. Turkey possesses an extended system of marine protected areas. Despite this noteworthy achievement, management arrangements have been slow to come into force for the effective protection of marine biodiversity. Today, this wealth of biodiversity faces severe and growing threats particularly from urban sprawling, unplanned tourism development and overfishing.

To address some of these issues, the MedPartnership project through its executing partners has implemented a number of activities in Turkey.

- Case study on wetlands in Adana; Mersin and Mugla by UNESCO-IHP
- Chromium and BOD control of tanneries effluent by MEDPOL
- Plan and specific zoning for the management of the Kaş-Kekova SPA by WWF
- PCBs management and disposal by MEDPOL and SCP/RAC

Integrated Approaches for the Implementation of the SAPs and NAPs: ICZM, IWRM and Management of Coastal Aquifers

Case study on wetlands in Adana; Mersin and Mugla
UNESCO-IHP and national experts from Turkey worked together between 2010 and 2014 on desk studies that formed the basis of regional synthesis on (1) a summary of the legal, policy and institutional framework for groundwater management; (2) the risk and uncertainty associated with coastal aquifer management, including characterization of the main coastal aquifers; and (3) the state of coastal groundwater dependent wetlands and their services.

There are numerous laws related to water which regulate the public sector activity by, for example, defining the responsibilities for the construction of water networks, operation and maintenance obligations, and their financing. Special legislations on the harmful effects of water have been enacted, for example, for flood control, drainage and sewerage. Turkey is about to complete the studies for the enactment of an integrated water law. The major law for the management of coastal aquifers as well as groundwater is the Law no 167 on Groundwater (1960). Turkey's State Hydraulic Works, responsible for water resources management, identified 11 main basins on the country's Mediterranean coast which furnish groundwater for domestic, industrial and agricultural activities.

In Adana, the Yumurtalık Lagoon and Akyatan Lagoon are Ramsar sites and nature reserves, while the Tuzla Lagoon is a nature reserve. All three lagoons are depending on deep and shallow groundwater (flow and discharge), rainfall and influence of the sea. Water abstraction from the wetlands and its tributaries is high. Cattle raising and fishing have a high impact, as well as input of urban wastewater. Agricultural diffuse pollution is high.

In Mersin, the Dipsiz Wetland (nature reserve) and Göksu Delta (Ramsar site & nature reserve) rely both on rainfall, runoff in the basin, deep and shallow groundwater (flow and discharge) and are under the influence of the sea (tide and waves). Groundwater abstraction from the wetlands is high. Cattle raising, fishing, and extensive agriculture have high impacts. The wetlands are also affected by input of urban wastewater and agricultural diffuse pollution.
The Dalaman and the Dalyan Wetlands in Muğla are both nature reserves. Users are involved in the Dalayn wetland. They depend on rainfall on the wetland, runoff in the basin, deep and shallow groundwater, (flow, discharge and open). Groundwater abstraction is high. Cattle raising, fishing and extensive agriculture have high impacts. Pollution comes from input of urban wastewater, and agriculture.
UNESCO-IHP's main partner in Turkey was the State Hydraulic Works (DSI). Hacettepe University (Ankara) also provided expertise.

Facilitation of policy and legislative reforms for SAP-MED
Chromium and BOD control of tanneries effluent
The specific objectives of the demonstration project on Chromium (Cr) and Biochemical Oxygen Demand (BOD) control in tanneries were to improve the legislative and institutional framework for the control of Cr and BOD releases from tanneries in Turkey; to prepare and implement a pilot project on Cr and BOD control in a group of medium size tanneries; and to prepare and implement Guidelines on Cr and BOD control in tannery's effluents.
A regulatory act to promote pollution reduction through recycling was prepared in the aftermath of extensive discussions all tannery sector representatives organized by the Turkish Ministry of Environment in 2012. An implementation plan was also developed and Turkey confirmed that it will implement it outside the scope of the project.
A report on control of Chromium and BOD releases from Tanneries in Turkey was prepared by Istanbul Technical University Environmental Engineering Department. It focused on the improvement of existing legislations, improvement of institutional capacities for effective enforcement of legislations, improvement of recycle and disposal facilities (collection, treatment and recycle), building of human resources, and implementation plan for suggested policy reforms.

Plan and specific zoning for the management of the Kaş-Kekova SPA
The Kaş-Kekova SPA was first established to protect the outstanding archaeological value of the Lycian ruins found along its coastline. In 2006, it was enlarged to include key marine ecological and biological areas. Within the framework of the MedPartnership project, WWF assisted local and national authorities in developing the management plan for the marine area of Kaş-Kekova SPA through participatory process.
The project was implemented in partnership with WWF-Turkey (Local Project Coordinator), the Environmental Protection Agency for Special Areas (EPASA), established under the Ministry of Environment and Forestry and with authority on SPAs, Directorate General for Preservation of Natural Heritage (GDNAP), Areas Management Department, of the newly established Ministry for Environment and Urbanization and UNDP-Turkey.
National and local steering committees have been established, including representatives of relevant ministries, coast guard, local authorities and local stakeholders (fishermen, tourism service providers, etc.). Representatives of key ministries, project staff and local stakeholders have been trained on priority issues related to MPA management (Marine spatial planning - sustainable financing for MPAs - MPA management planning - planning for sustainable fisheries in MPAs) and the consultation process with local stakeholders for the development of the management plan was completed after 3 years.
Some preliminary studies for the site characterisation of the area have been performed while a mooring system was put in place for the benefit of the local diving centers. The project

included activities aiming to raise the awareness of the local communities and tourists on the new MPA. Additionally, a fully participatory process was carried out to develop the management plan for the MPA, contributing to the national strategy towards strengthening the system of MPAs in Turkey. The process lasted 3 years. The management plan of Kaş-Kekova SPA was successfully completed, approved and endorsed by relevant authorities and the no-take zones gazetted in the national fishery law. In summer 2012, the zoning plan was implemented and enforced by the Coast Guard, diving best practices were agreed by local diving operators, a mooring system was proposed and five buoys installed in key diving spots. Finally, GDNAP endorsed the document and led the procedure to issue regulatory decrees and orders.

"Developing management activities and designing MPA Zoning Plans will be based on the results of nearly 10 years of solid scientific research in Kaş-Kekova. This is key to ensure the support of local stakeholders."
Umut Tural, WWF Turkey

Environmentally sound management of equipment, stocks and wastes containing or contaminated with PCBs in national electricity companies
The project included both theoretical and practical training in all aspects of identification, storage, transport and disposal of PCB. It also had a module on transboundary movement of hazardous waste in accordance with the requirements of Basel convention.
The practical training on transformers drainage filled with PCB, and packaging according to international transport regulations IMDG (sea) ADR (road) provided local experts and companies with an opportunity to gain experience on handling.
Under the project, Turkey received 2 semi-mobile L2000DX analyzers/screeners. Moreover, 85 local experts were trained on auditing transformers/ capacitors and using analyzers, 85 local experts were trained on PCBs management and 9 were trained on importing and exporting PCB. The country was also supported to identify up to 644 tons of PCBs for disposal purposes, and received a regional guide on PCB management.
The notification procedure has started and is still running. At the time of writing this report, Turkey had disposed of 166.095 tons of PCBs in the country and shipped 333.86 tons outside the country for disposal, out of which 126.45 tons were already eliminated. The country has its own national team of experts to tackle the issues of recording, setting a realistic program Elimination of PCB, collecting and transporting to final destination for final disposal of solid contaminated apparatus and the liquid PCB.