



## Coastal Zone Protection in the Mediterranean Countries and Turkish Efforts

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### Abstract

This paper aims to strengthen our understanding of climate-related risks and human impacts on specific coastal ecosystems in coastal cities in Mediterranean countries using international project networks and studies of some Mediterranean cities. It draws on an analysis of legal framework, coastal agencies and international projects showing climate change impacts to highlight to national and municipal decision making and potential protection and adaptation options. Kaş-Kekova marine protected area project and ICZM planning efforts are summarized in Turkey from a city planning and public participation approach. The paper shows that public participation is as a necessary tool to ensure a successful implementation of ICZM strategies and climate change adaptation plans for Mediterranean coastal cities.

## 1. INTRODUCTION

“Coastal zone means the geomorphologic area either side of the seashore in which the interaction between the marine and land parts occurs in the form of complex ecological and resource systems made up of biotic and abiotic components coexisting and interacting with human communities and relevant socio-economic activities” [1].

“Coastal zone protection covers the sustainable use and management of coastal zones in order to preserve the coastal natural habitats, landscapes, natural resources and ecosystems, in compliance with international and regional legal instruments. Countries should take measures to protect the characteristics of certain specific coastal ecosystems such as wetlands and estuaries, marine habitats, coastal forests and woods, dunes, coastal landscapes and islands” [1]. Planning and management of these specific coastal ecosystems needs to promote environment friendly activities and special programmes and international collaborative instruments, in the sectors of transport, tourism, fishing, waste and water.

In recent decades, environmental degradation has accelerated; coastal population grows, coastlines are being built up and pollution affects sea and fish resources. The landscapes-seascapes and biodiversity of the Mediterranean region are being degraded by overuse. Environmental pressures on coasts in next 20 years will increase, especially in the areas of tourism with 137 million more visitors, transport which will double in volume, in the built areas (to house 33 million more people) with urban sprawl and in the energy infrastructures. The unsustainable production and consumption increases the costs of environmental degradation, which already account for between 3-5 % of GDP, according to the World Bank [2]. The environment should not be thought as a constraint, but as an asset for blue economy and an encouragement in the Mediterranean unique natural and cultural heritage [3]. The Mediterranean is also one of the world's biodiversity hotspots. Representing less than 1% of world oceans, the Mediterranean counts over 10% of

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all known species including many endemic species. The remarkable Mediterranean species are: Fin whale (*Balaenoptera physalus*), loggerhead turtle (*Caretta caretta*), long-spined sea urchin (*Centrostephanus longispinus*), date shell (*Lithophaga lithophaga*), monk seal (*Monachus monachus*), giant limpet (*Patella ferruginea*), pen shell (*Pinna nobilis*), posidonia (*Posidonia oceanica*), the slipper lobster (*Scyllarides latus*) and bottlenose dolphin (*Tursiops truncatus*) [4].

Mediterranean marine ecosystems are under significant pressure. Coastal development and urbanization are among the main threats and these have intensified over the last few years. Tourism has negative impacts on the marine environment through uncontrolled urban sprawl in the coastal zones with the heavy use of water and production of solid wastes and sewage. Maritime transport affects the Mediterranean Sea negatively; the risks of pollution are still poorly controlled. Fishing is another important activity in the Mediterranean. The uncontrolled rise in fishing effort has led to the decline of many fish stocks. The climate change will bring visible results to Mediterranean Sea in the next years [4].

The hand-in-hand challenges of climate change and peak oil, and also natural and man-made disasters have highlighted the need for urban systems that are able to cope with unexpected shocks. Cities, coastlines, agricultural lands and industrial areas are heavily impacted by human activity, and as such building resilience in these areas is of particular importance. Climate change brings with it higher mean, maximum and minimum temperatures, heavier rains and rising sea levels to the detriment of water quality, soil, crops, energy consumption, infrastructure and coasts [5,6]. The most adverse impacts of climate change are likely to be experienced in coastal cities where the population, infrastructure and resources are concentrated.

Based on a study evaluating population growth, urbanization and climatic changes in 136 coastal cities across the world, the cities located in coastal areas face sea level rise, flooding and coastal erosion risk. Low elevation coastal zones, often exposed to cyclones and storm surges, cover 2% of the world's land area but accommodate 10% of the world's total population and 13% of the world's urban population. Approximately 360 million urban residents live in coastal areas less than 10 meters above sea level and are vulnerable to flooding and storm surges. 15 of the world's 20 megacities are at risk from rising sea levels and coastal surges [7].

The main objective of this paper is to strengthen our understanding of coastal zone protection in the Mediterranean countries using international project networks and studies of some European and south Mediterranean cities that are different in their socio-economic characteristics. It draws on an analysis of legal framework of ICZM, coastal agencies and international projects to highlight to national and municipal decision making and potential protection and adaptation options. Kaş-Kekova marine protected area project is selected as a case study to exemplify international coastal zone protection efforts in Turkey. Specifically, integrated coastal zone management (ICZM) problems and possible solutions are drawn in the Mediterranean region and ICZM planning efforts are summarized in Turkey from a city planning approach. The paper concludes with some recommendations on ICZM, coastal protection and adaptation plans and strategies for the Mediterranean coastal cities.

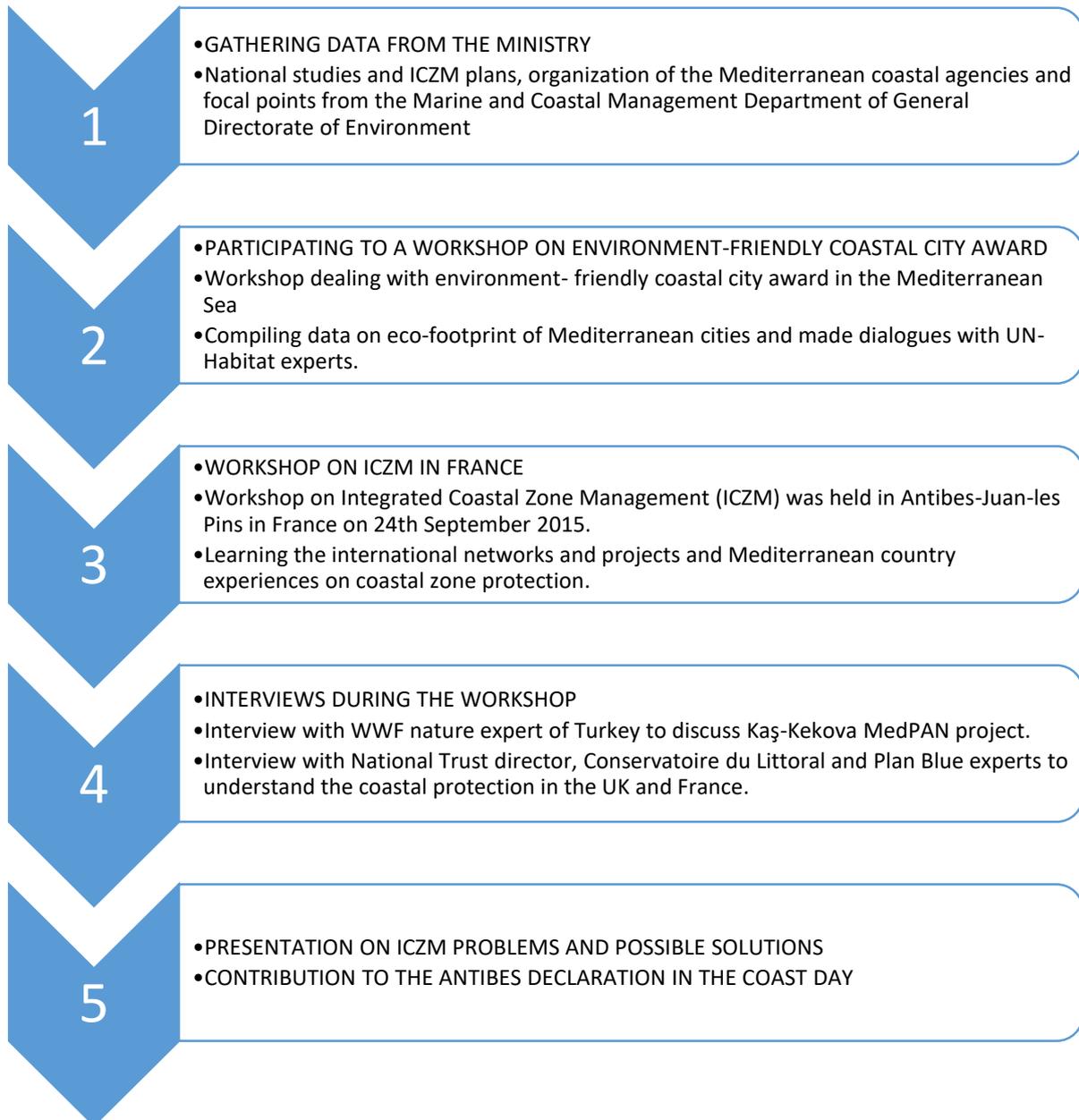
## 2. MATERIALS AND METHODS

Firstly, national studies and ICZM plans, organization of the Mediterranean coastal agencies and focal points were obtained from the dialogues between experts in the Marine and Coastal Management Department of General Directorate of Environment, in the Ministry of Urbanization and Environment in Ankara, Turkey. On 25-26 May, 2015, a workshop was organized by the same department dealing with environment- friendly coastal city award in the Mediterranean Sea. In this workshop, data was gathered on eco-footprint of Mediterranean cities and made dialogues with UN-Habitat experts.

In the framework of a partnership between the French Development Agency and Plan Bleu, a brainstorming and knowledge sharing workshop on Integrated Coastal Zone Management (ICZM) was held in Antibes-Juan-les Pins in France on 24th September 2015. This workshop which aimed to define the objectives of this partnership on the ICZM theme, by taking account of societal and environmental issues at the earliest stage of the coastal process management and the operation of the proposed strategic recommendations. This

workshop fitted also into the Antibes Coastal Meetings and the Mediterranean Coast Day that were held 2015 in Antibes-France by PAP/RAC with the support of the Europe. Participation to this workshop improved the learning on the international networks and projects and Mediterranean country experiences on coastal zone protection. Deep interview was made with WWF nature expert of Turkey to discuss Kaş-Kekova MedPAN project. He informed about all the maps and documents about the area. After the brainstorming and knowledge sharing workshop, another interview was made with National Trust director, Conservatoire du Littoral and Plan Blue experts to understand the coastal protection in the UK and France. Contribution to the team who prepared a presentation about the ICZM problems and possible solutions was useful to strengthen to the understanding on coastal zone protection. In the Coast Day, The Antibes Declaration was developed based on the meeting conclusions which were presented as the commitment of countries bordering the Mediterranean towards the protection of the coast. It was brought to the attention of the United Nations Climate Change Conference during the UNFCCC COP21 that was held in Paris December, 2015. The steps of the study is shown in Table 1:

**Table 1.** *The steps of the study*



### 3. INTERNATIONAL INSTRUMENTS ON COASTAL ZONE PROTECTION AND SOME PROJECTS IN MEDITERRANEAN COUNTRIES

The following section briefly describes the goals and objectives of the Mediterranean Action Plan and Barcelona Convention. The definition of ICZM and the importance of ICZM protocol is given, then UNEP activity centers, international coastal agencies, NGOs are addressed on coastal zone protection. Then the next section emphasizes the implementation of the ICZM Mediterranean Protocol. Some international demonstration projects have been made to identify the climate change, coastal problems and to make risk assessment.

#### 3.1. Mediterranean Action Plan, Barcelona Convention, Mediterranean Strategy, ICZM Protocol And Coastal Agencies

In 1975, the Mediterranean States and the European Community approved the Mediterranean Action Plan (MAP) as the framework for cooperation in addressing common challenges of environmental degradation. This plan aimed to assist the Mediterranean Governments to assess and control marine pollution, to formulate their national environmental policies and to improve their capacities to identify better development strategies for the allocation of resources. The Convention for the Protection of the Mediterranean Sea against Pollution known as Barcelona Convention was adopted in 1976, addressing prevention of pollution by dumping from ships and aircraft, and cooperation in combating pollution in cases of emergency. The main objectives of the Barcelona Convention are to assess and control marine pollution, to ensure sustainable management of natural marine and coastal resources, to protect the marine environment, the natural and cultural heritage and to strengthen solidarity among the Mediterranean coastal states. It can be regarded as a corner stone for the promotion of environmental protection and integration in the Mediterranean. The European Community and all the EU Mediterranean Member States are contracting parties to the Convention [8].

The 22 contracting parties to the Barcelona Convention are: Albania, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Lebanon, Libya, Malta, Monaco, Montenegro, Morocco, Slovenia, Spain, Syria, Tunisia, Turkey and the European Union [8]. Article 4.3(e) of the Barcelona Convention, requests the Contracting Parties to promote the integrated management of the coastal zones, taking into account the protection of areas of ecological and landscape interest and the rational use of natural resources [8].

Moreover, the 21 Mediterranean countries and the European Community decided, at the 12th Conference of the Contracting Parties to the Barcelona Convention (Monaco, November 2001), in line with the World Summit on Sustainable Development process in 2002, to prepare a Mediterranean Strategy for Sustainable Development (MSSD). They requested the Mediterranean Commission on Sustainable Development (MCSD) of the Mediterranean Action Plan (MAP) to develop the Strategy. The 2nd Euro-Mediterranean Ministerial Conference on the Environment (Athens, July 2002) approved the strategy. The Mediterranean Strategy is a framework strategy. Its aim is to adapt international commitments to regional conditions, to guide national sustainable development strategies and to promote a partnership between countries at different levels of development. The four objectives are put with the aim of promoting progress towards sustainability in the economic, social and environmental areas and in the field of governance; 1) contribute to economic development by enhancing Mediterranean assets, 2) reduce social disparities and strengthen cultural identities, 3) change unsustainable production and consumption and bring the sustainable management of natural resources, 4) improve governance at the local, national and regional levels [2].

Seven priority fields of action are put below to make progress [2]:

- better management of water resources;
- improved rational use of energy, increased renewable energy use and mitigation of and adaptation to climate change;
- sustainable mobility through transport management;
- sustainable tourism;

- sustainable agricultural development;
- sustainable urban development; and
- sustainable management of the sea, coastal zones and marine resources.

These priority areas of action have been chosen because they are those most threatened by unsustainable trends. They are also important areas at the economic and social levels in the Mediterranean region.

Seven protocols have been made addressing specific aspects of Mediterranean environmental conservation complete the MAP legal framework [9]. The last protocol was The Protocol on Integrated Coastal Zone Management (ICZM) in the Mediterranean is one of the Protocols appended to the Barcelona Convention, a tool used by the UNEP Mediterranean Action Plan. It was adopted on 21 January 2008 in Madrid (signature by 15 of the Convention's Contracting Parties) It was developed to provide a common framework for the Contracting Parties to promote and implement integrated coastal zone management. On 13 September 2010, the Council adopted the decision to ratify the Protocol on Integrated Coastal Zone Management to the Barcelona Convention (Council Decision 2010/631/EU). This EU conclusion decision follows the signature of the Protocol adopted by the Council on 4 December 2008 (2009/89/EC) [8]. It took effect on 24 March 2011. It has since been ratified 9 times (8 Mediterranean countries and the European Union).

The Mediterranean Action Plan's Priority Actions Programme Regional Activity Centre (PAP/RAC) in Split, Croatia, is particularly responsible for its implementation [10].

Integrated coastal zone management (ICZM) means "a dynamic process for the sustainable management and use of coastal zones, taking into account at the same time the fragility of coastal ecosystems and landscapes, the diversity of activities and uses, their interactions, the maritime orientation of certain activities and uses and their impact on both the marine and land parts". The objectives of integrated coastal zone management are to [1]:

- facilitate the sustainable development of coastal zones in harmony with economic, social and cultural development;
- protect coastal zones for future generations;
- ensure the sustainable use of natural resources and water;
- preserve coastal ecosystems, landscapes and geomorphology;
- prevent the effects of natural hazards and climate change by human activities;
- collaborate with public and private sectors at the national, regional and local levels, which affect the use of the coastal zone.

The ICZM Protocol considers coastal zones to be the common, natural and cultural heritage of the Mediterranean. It focuses on the requirement for consistency between decision-making centres, which are often too dispersed. The PAP/RAC developed a Regional Action Plan for the implementation of the ICZM Protocol for the 2012-2019 period, adopted during the Barcelona Convention COP 17 (Paris, February 2012). The Action Plan is based on the principles and objectives for ICZM, listed in the Protocol, and lists the specific activities to be undertaken by the Contracting Parties, in partnership with UNEP/MAP and PAP/RAC [10].

In this way, PAP/RAC supports Mediterranean countries in drawing up national ICZM strategies. Every year on 25 September, PAP/RAC organises a "Coast Day" in a Mediterranean country, in order to promote ICZM and bring together scientific experts, policymakers and the general public. Since the 2000s, it has been promoting Coastal Area Management Programmes (CAMPs) in each country [10].

The Plan Bleu in Sophia Antipolis, France is one of the six regional activity centers like PAP/RAC aims to raise awareness of Mediterranean stakeholders and decision makers on environment and sustainable development, by producing future alternatives for decision-making [10]. In the early 2000s, Plan Bleu developed a set of tools and methods for the systemic and prospective analysis of sustainability, in order to support local initiatives and ICZM in the Mediterranean Region. These studies seek to bring together local

players and stakeholders and to assess and explore the level of sustainability of a socio-ecological system. Sustainability methods were implemented by Plan Bleu as part of CAMPs in Malta (2000-2002), Lebanon (2002-2003), Algeria (2003-2004), Slovenia (2005) and Cyprus (2006-2007). Plan Bleu is a partner of the ClimVar project, funded by the Global Environment Facility (GEF) and coordinated by the MAP. It focusses on the integration of climate change and variability in national ICZM strategies [10]. Together with Plan Bleu, Conservatoire du Littoral (The Coastal Conservancy) in France works as a public institution under the authority of the Minister responsible for the protection of nature. In 2015, Conservatoire du Littoral celebrate 40 years in coastal protection. In these 40 years, Conservatoire du Littoral preserved 160 000 hectares or 1450 km of coastline (13% of the linear in France) with a budget of 50 € million per year, with 250 managers, 180 agents and 900 guards in the coasts and 40 million visitors per year [11].

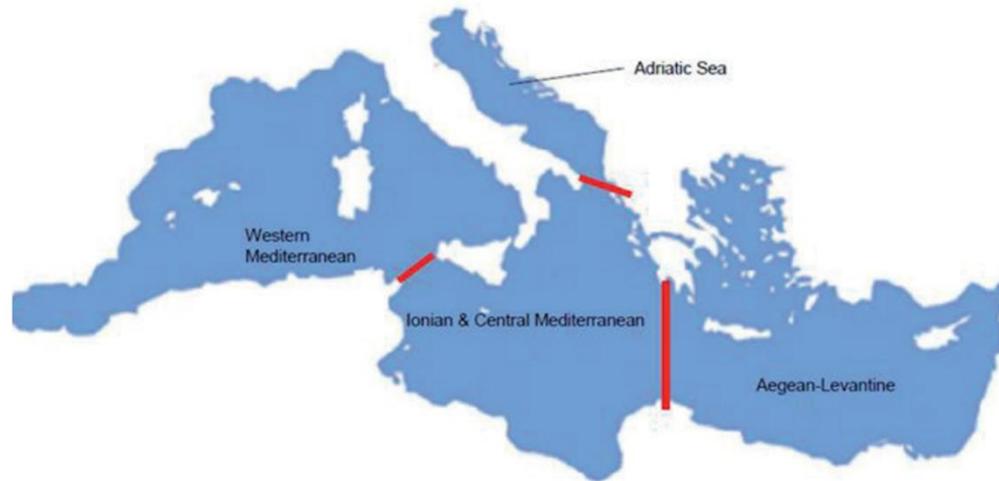
Beyond the UNEP activity centers and national coastal agencies, some large NGOs or charities have enormous efforts to protect and restore the coastlines in their countries. National Trust is a charity in the UK which owns the coastal zones of 742 km. They bought the coastal lands 50 years ago to conserve their coastal and marine wildlife and restore their coastal land and seascapes. Their campaign named the Neptune Coastline, supported with the generous donations from the world put some coastal adaptation strategies in the 80 hotspots by 2020. To build a common approach to coastline management, some partnerships are made and they will continue to raise fund for this campaign to protect the natural character of the UK coastlines [12].

### **3.2. Efforts of Mediterranean Countries and Coastal Zone Protection Projects**

Gressot et al. track the Eco-Footprint<sup>1</sup> (EF) of cities in the Mediterranean region [13]. Out of the 17 Mediterranean cities analyzed, Valletta, Genoa and Athens are the cities with the highest per capita EF in the region between 4.8 and 5.3 gha per person, while Tirana, Antalya and Cairo have the lowest EF between 2.1 and 2.9 gha per capita. Moreover, Tunis' EF exceeds that of Tunisia by 70% and Valetta's EF exceeds the EF of Malta by 20%, whereas Naples' EF is 26% lower than the average per capita EF in Italy. The main Footprint drivers in the analyzed cities are food consumption (30% of resource requirements in all the cities), transportation (20%) and consumption of goods (15%). Differences between cities' EF are primarily driven by different purchasing power, different levels of technology and differences in lifestyles. These findings can be used to help design sustainability policies and as positive reinforcement to promote coastal zone protection in the countries by limiting consumption. In the Mediterranean countries, economic and social analysis made by Plan Blue focused on main marine sectors such as fishing, aquaculture, leisure and tourism, shipping and the offshore extraction of oil and gas. These sectors generate around €400 billion of income, €200 billion in gross value added and 4.5 million jobs. Employment is higher at Aegean-Levantine Sea and regional gross value added and regional turnover is higher at Western Mediterranean sub-region (Figure 1) [14].

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<sup>1</sup> The Ecological Footprint represents the productive area required to provide the renewable resources humanity is using and to absorb its waste (WWF definition).



**Figure 1.** Ecological sub-regions in the Mediterranean Sea [14]

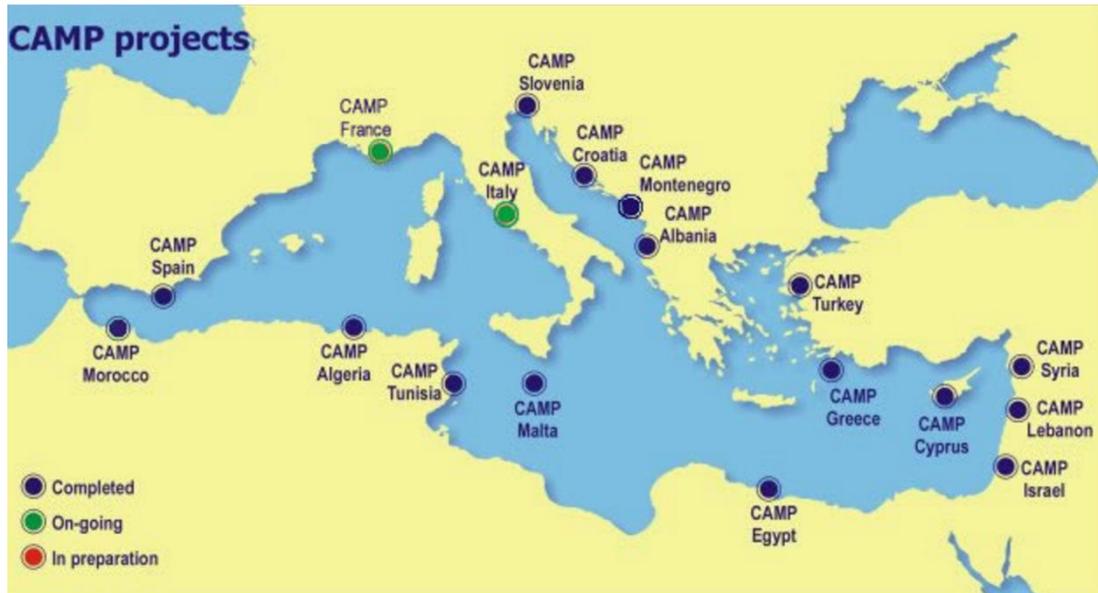
However, climate change impacts put coastal communities and assets at risk. CRI-MED coastal risk index at the Mediterranean Sea composed of coastal forcing including the variables related to climate hazards (storms, drought, sea-level rise), integrating the resilience variables (age of population, level of education) coastal vulnerability variables (landform, elevation) and coastal exposure describing hotspots (landcover, population density). According to this method, the regional risk assessment map of coastal risk to climate change is given in five categories. Southern Mediterranean countries like Morocco, Algeria, Libya, Egypt, Palestine and Syria are at extremely high risk and Adriatic Sea countries like Albania, Montenegro and Croatia are at moderate coastal risk (Figure 2) [15]. This study was made by PlanBleu under the ClimVar&ICZM project. This project is a complementary project of the GEF/UNEP/WorldBank MedPartnership project. ClimVar&ICZM project is a tool to draw the climate change in coastal zones of Mediterranean Sea, by directing them into ICZM [16].



**Figure 2.** Regional risk assessment map for the Mediterranean by CRI-MED method [15]

In 1989, the Coastal Area Management Programme (CAMP) was established and inserted into the stewardship activities of the Mediterranean Sea. These activities were followed by Barcelona Convention aimed at the Protection of Mediterranean Marine Environments and Coastal Regions. The CAMP programs

are coordinated by the PAP/RAC of the Mediterranean Action Plan of the United Nations Environment Programme (UNEP). CAMP is aimed to implement sustainable coastal management projects developed in pilot areas of the Mediterranean at local, regional and national level. In the 1990-98 period, CAP project had been made in: Albania (The Albanian coast), Croatia (The Kastela Bay), Greece (The Island of Rhodes), Syria (The Syrian Coast), Tunisia (The City of Sfax) and Turkey (The Izmir Bay). The project in Fuka, Egypt, has been finished in 1999, and the project in Israel in June 2000. CAMP Malta was completed in November 2002, CAMP Lebanon in December 2004, CAMP Algeria in January 2005, CAMP Slovenia in 2007, CAMP Cyprus in 2008 and CAMP Morocco in 2010. CAMP Spain has been ended in 2013. CAMP Montenegro has been completed in 2015, while CAMP Italy and CAMP France are on-going [16].



*Figure 3. CAMP projects map [16]*

Coming to MedPartnership, it is a strategic partnership for the Mediterranean Sea large marine ecosystem by UNEP/MAP and financial support of GEF. It tries to achieve sustainable use of marine and coastal resources through integrated resources, to enhance the protection of critical habitats and species, biodiversity hotspots, to reduce pollution from land-based resources and to integrate climate considerations into national marine and coastal planning. This partnership contains 78 demonstration projects from 13 Mediterranean countries to promote good practices for the sustainability of the project beyond its lifespan [17]. The MedPAN North project was an independent project operating within the MedPAN network framework under the leadership of WWF-France. It brought together 6 European countries bordering the Mediterranean: Spain, France, Greece, Italy, Malta and Slovenia. With a budget of 2.38 M €, the project started in July 2010 and ended in June 2013. The MedPan South project specifically engaged 5 countries (Algeria, Croatia, Libya, Tunisia, and Turkey) which was started in 2008 and ended in 2012 with the budget of 3.8 M € [4].

In February 2015, MedPAN launched a new Call for Small Projects (CSP) to support the projects in Mediterranean MPAs of the following countries: Turkey, Syria, Lebanon, the Palestinian Territories, Egypt, Libya, Tunisia, Algeria, Morocco, Bosnia and Herzegovina, Montenegro and Albania. The MedPAN Secretariat selected 4 projects from Albania (Karaburuni-Sazani MPA), Lebanon (Tyre Coast Nature Reserve), Turkey (Gökova MPA) and Tunisia (Cap Negro-Cap Serrat MPA) [4].

#### **4. COASTAL ZONE PLANS AND SEA-MED PROJECT IN TURKEY**

Turkey has the longest mainland coastline in the region and a wide diversity of ecosystems boasting the highest biodiversity in the Mediterranean. Despite a coastal law, authorities' responsibilities overlap in some areas and there are gaps in others. The National Committee on Turkish Coastal Zone Management

(KAY) established in 1993 plays an important role in promoting integrated coastal zone management (ICZM). In 1997, the Environmental and Coastal Management Agency was established by the Ministry of Environment to prepare, implement and evaluate environmental management plans. Since 2010, General Directorate of Spatial Planning in the Ministry of Environment and Urbanism are responsible to prepare integrated coastal zone plans in Turkey, are briefly summarized in the next section. The following section focuses on Kaş-Kekova marine protected area project to exemplify international coastal zone protection efforts in Turkey.

#### 4.1. Integrated Coastal Zone Plans in Turkey

There are many pioneer attempts in Turkey to conduct pilot ICZM projects to create legal, administrative and technical framework to make ICZM approaches common. In recent years General Directorate of Spatial Planning in the Ministry of Environment and Urbanism have also given some plans to the private sector or municipalities to prepare in various coastal parts of Turkey. It is listed below (Figure 4) [18]:

- İskenderun Bay Integrated Coastal Zone Plan (ICZP) (year 2009, including 8 sub-regions),
- Sinop ICZP (2010, 6 sub-regions),
- Samsun ICZP (2011, 4 sub-regions),
- İzmir ICZP (2011, 11 sub-regions),
- Antalya ICZP (2011, 13 sub-regions),
- Artvin-Rize Provinces ICZP(2011, 3 sub-regions),
- İzmit Bay ICZP (2014, 10 sub-regions),
- Bursa Province ICZP (2015, 7 sub-regions).



**Figure 4.** Provinces which have ICZP in Turkey

Three of these plans covers the Mediterranean coasts such as Iskenderun Bay-Hatay, Izmir and Antalya ICZP. The main approach of the Ministry was to prepare spatial development strategies in the coastal zones [19]. All plans started with the preparation of the inventory of natural, geological, oceanographic, climatic and biological features of these coastal zones. Sub-regions were determined according to these inventories. Spatial data and GIS play an important role in supporting the sub-region determination steps of ICZM. It involves formulating the problems, identification, displaying alternatives, building and using models for planning [20]. SWOT analyses have been made. Some participatory meetings were held in the sites and

spatial strategies were put in the plans scaled in 1/50.000 up to 1/200.000 [21]. Many environmental proposals had been made in these plans, however, these spatial strategies are not enough in ICZM, organizational, administrative and legal arrangements should be made and financial dimensions should be detailed in these planning processes. And also, Turkish government should sign ICZM protocol immediately like other contracting parties such as Algeria, Croatia, France, Greece, Israel, Italy, Malta, Monaco, Montenegro, Slovenia, Spain, Syria, Tunisia and EU [16].

## 5. KAŞ-KEKOVA MARINE PROTECTED AREA SEA-MED PROJECT

There are three ministries in Turkey which are responsible for protected areas: Ministry of Environment & Urbanization, Ministry of Culture & Tourism and Ministry of Forest & Water Affairs. Protected areas include 12 different conservation categories, represent forest, wetland, mountain, marine, sea shore and sand dune, plate steppe and mountain steppe ecosystems. Protected areas in Turkey cover 7% of the country. 346.138 hectare protected area covers 4% of Turkey's territorial waters [18]. Marine & Coastal Protected Areas (MCPA) are managed by different Ministries under different status. Marine and Coastal Protected Areas of Turkey National Draft Strategy has five main objectives [22]:

1. Increase public awareness,
2. strengthen capacity and institutional structure for the management of Marine and Coastal Protected Areas,
3. provide effective cost management in MCPA,
4. enhance coordination among public, private organizations and civil initiatives for the management of MCPA,
5. integrate management plans of MCPA with spatial plans.

The Kaş-Kekova region, in the Lycia, southwest of Turkey, in the province of Antalya, has a unique natural heritage. Lycia is a part of the Mediterranean coast of Turkey where some areas have still not been destroyed by human development around a population of varies from 7000 to 20.000 during the high season. This includes the most varied and spectacular coastal and marine landscapes, as well as fauna and flora in 166 km<sup>2</sup> in marine areas [23]. The Kaş-Kekova region accommodates *Posidonia oceanica* meadows, marine turtles, monk seals and dolphins. These areas are the most popular diving sites in Turkey.

The marine biodiversity assessment was carried out in the framework of the MedPAN South Project in 2009 within the borders of Kaş-Kekova Specially Protected Area (SPA). In addition some flagship species were selected to highlight habitats. In the framework of the MedPAN South Project, however, all the marine species were examined, information was gathered about sediment structure, physical properties, fauna and flora of the region for the first time [23]. No fishing and no diving zones are put into force after the project.

Kaş-Kekova SEPA Marine Management Plan & Monitoring Study in No Fishing Zones started in 2014 and will end in 2017 as SEA-MED project [24]. The project has three main objectives:

1. To develop and implement a sustainable tourism management plan for Kaş-Kekova SPA- including a financial plan, a monitoring plan and a communication program.
2. To support and understand general public, decision-makers and investors about the ecological, social and economic value of Kaş-Kekova SPA in Mediterranean MPAs.
3. To improve the capacity, skills and tools for the communities for the planning and development of sustainable economic activities in Kaş-Kekova SPA.

Eight MPAs in six Mediterranean countries advance through progressive phases to reach operational and financial self-sufficiency in SEA-MED projects (Figure 5) [25].



*Figure 5. SEA-MED projects in the map [25]*

Stakeholders in Kaş-Kekova Marine Protected Area Sea-Med Project are listed such as [26]:

- Provincial Directorate of Environment & Urbanization,
- Provincial Directorate of Culture and Tourism,
- Provincial Directorate of Transportation, Maritime & Communication ,
- Kaş Yacht Marina Administration,
- District Governorships of Kaş & Demre,
- Kaş Tourism Society,
- Hotelier Union of Kaş-Kalkan-Patara,
- Kaş Underwater Society,
- Kaş Municipality,
- WWF Turkey,
- Kaş Fisheries Cooperative,
- Kaş Sailor's Society,
- Kaş Culture and Tourism Information Office,
- Kaş District Directorate of Food, Agriculture and Livestock,
- Kaş Coast Guard Command,
- Restaurant owners,
- Kaş Harbor Directorate,
- Village headmen in the region,
- Project Experts/Consultants.

Some challenges have been determined in this participatory project. There is a lack of management unit and enforcement, this region suffers from inadequate infrastructure and patrolling. Political situation and restructured ministries has made the process more complicated. Lack of data, lack of clear-cut laws, and lack of employing science are the other problems of the region like other coastal regions of Turkey [27]. However, this project aims to enhance the partnerships between tourism enterprises, government agencies, protected area managers, planners and tourists for higher motivation in the local community.

The project has many powerful dimensions such as this region has a management plan showing no-fishing and no-diving zones (Figure 6). The interest of non-governmental organizations is remarkable. The regional networks such as WWF, MedPAN, MedPartnership gives financial and organizational support to this marine protected area. For the further studies, some actions will be taken to work in progress such as to create a local working group to coordinate the management plan, to identify the long term funding for the

prioritized actions, to get support from public sector and tourism enterprises to contribute to Kaş-Kekova's coastal zone protection.

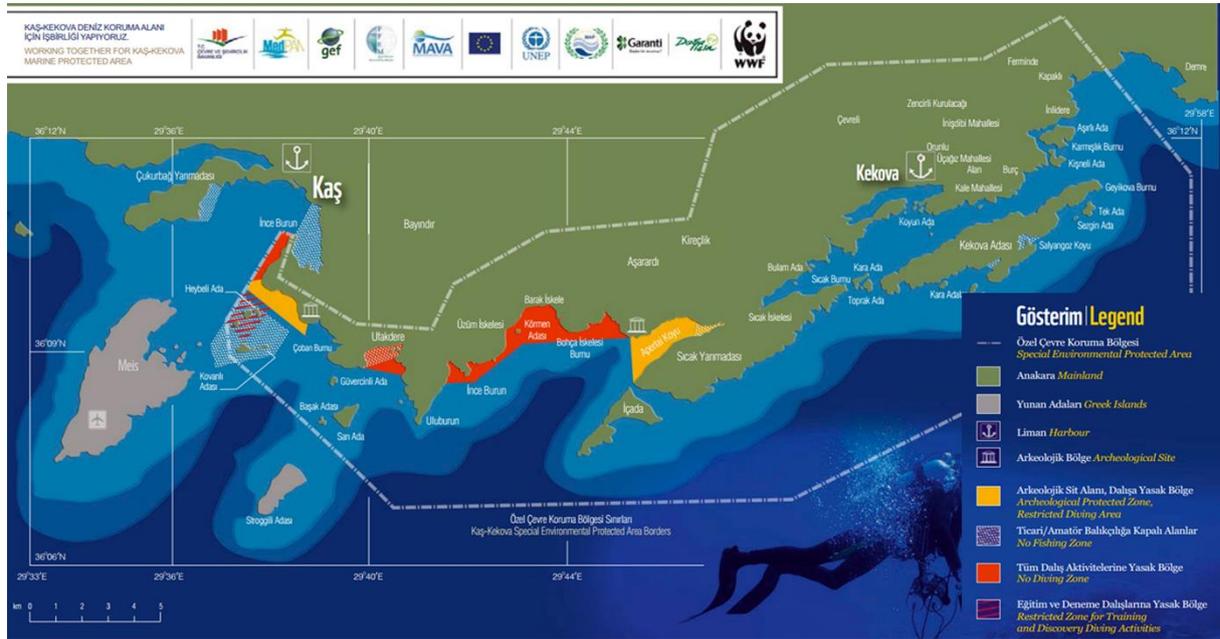


Figure 6. Kaş-Kekova Marine Protected Area Zoning Map [28]

## 6. RESULTS

ICZM is not developed as a standalone approach which can strengthen link with planning policies. ICZM can bridge between spatial planning, water management, maritime planning from a sustainability perspective. In line with Mediterranean Strategy for Sustainable Development, a shift towards the sea should be considered for the need of coastal space and resources for blue economy with natural capital.

Planning is to analyze, understand, anticipate and make strategic and political choices to better organize the space and respond to the future needs of the inhabitants of a given region. The Article 5 of the ICZM Protocol provides a rational planning of activities on coastal areas, to ensure both a sustainable use of resources and the integrity of the ecosystems, and the need to promote consistency between public and private initiatives. The preparation of a national ICZM strategy answers to the necessity to structure a joint vision. For this, a national ICZM strategy allows to express a clear vision for the sustainable development of coastal areas; to integrate and build efficient governance, and to identify the priorities in the diverse sectorial policies.

The spatial planning of coastal areas is not enough to manage and control the balance between the different land uses and sectors. Integration of the land and sea is important. If planning is only defined on land, it will be insufficient. A shoreline management plan should be made where the coastal policies are put to avoid population to protect the marine environment. So a maritime spatial planning aiming to analyze and plan the spatial and temporal distribution of human activities in marine areas is useful. ICZM is most common at the local scale while spatial planning is often applied at larger scales. Both share policies with the same goal, the resolution of land use conflicts for the development and conservation of coastal and marine environment. Spatial planning at the national level is essential in order to examine the impact of human activities in urban and regional coastal zones. Coastal zone management becomes vital because of the increasing importance of coastal and marine protection.

While maritime spatial planning is important, the studies also show that cities need to make a proactive effort to consider climate related risks as an integral part of city planning. City planners need to develop adaptation strategies for combating climate related risks involving a framework of policy and regulations

and investments. Such a strategy can facilitate actions in each sector at the coastal, regional and city levels. Developing and updating scenarios for planning will be essential for city planners. This can strengthen the collaboration between planning, research institutions and public agencies to make decisions for resilient coastal management in the long term. Planners should also encourage low cost climate adaptation actions to improve the health and ecosystems and to build community capacity to manage ecosystems sustainably. Enforcing land use regulations to select less vulnerable areas to climate change risks and enhancing the resilience of coastal areas by some protection tools as land use planning and engineering gain more importance in this age. Relocation or retrofitting for poorly located facilities, developing performance measures for neighborhoods, building design and considering energy and water efficiency are some key strategies for the planners and local governments. Promoting green infrastructure and watershed management to reduce storm water run-off, to gain rain water, to mitigate heat island effect and to rehabilitate coastal ecosystems for reducing groundwater salinity in coastal zones are the other strategies that should be used for land use control. It is important to improve the capacity of local governments to adapt to climate change in coastal areas. This involves prioritizing different adaptation alternatives, improving coordination between various agencies and sector plans, and incorporating climate change strategies into the earliest stages of decision making in the governance process.

ICZM means integration, The integration requires different modes of governance. This is a major challenge such as:

- integration between land areas, wetlands and marine areas, which, together, mean coastal zone management;
- integration between the various economic sectors and activities;
- integration between scientific disciplines;
- integration between many ministries, and national or local government levels;
- participatory integration of all stakeholders (local governments, scientific and research institutions, coastal agencies, international cooperation contributors, NGOs, volunteers etc.) in the ICZM process.

The role of local governments is very important in the creation of adaptation plans, which can be divided into sectors such as health, water, disaster management and climate smart strategies; and establishing offices to oversee climate protection, energy, environmental health and coastal policy can be useful [5]. Local governments are direct partners for coastal protection and they are authorized in protected areas within their expertise, they provide education and communication, they measure in coastal areas, and intervene to structural improvements of coastal areas. Local governments also provide staff for ICZM public policies regarding climate change. NGOs can contribute coastal protected areas for sustainable development. NGOs can write projects for sponsors and request for private donations or fundraising. For instance, The Neptune National Trust campaign raised 60 million pounds sterling to acquire 2,180 km of coastline and provided access for walks and opportunities for sports while ensuring the protection of the environment [29].

The volunteers are the important stakeholders in coastal zone protection. The active volunteers provide their abilities, available time or their expertise for public awareness, environmental education, participation in ecological restoration projects, mobilization, volunteering for monitoring and clean up actions [30]. Also, scientific and research institutions provide their expertise for the sustainable management of coastal areas, they study on ecological areas, and other scientific topics such as sociology, architecture and culture. They are also beneficiaries since coastal areas are laboratory sites for them.

Professional users of natural coastal areas such as agriculture, fishing or tourism related occupations are the other stakeholders in ICZM process. They rely on rules and ethical issues in monitoring programs. Also, patrolling encourages landowners, businesses, local governments, farmers and hunters, to protect coastal areas and to increase their biodiversity. Lastly, international cooperation contributors work for coastal areas for the benefit of countries. These organizations provide expertise, they constitute knowledge and knowhow. In Europe, Conservatoire du littoral, PAP/RAC, Plan Bleu, the MEDPAN association for MPAs, WWF etc. work together in the projects to slow down the pressure of coastal areas through their expertise. Project approach is not enough [31], as it is limited in scope, time and resources but some projects prove to

be best practices. So, a new cycle of CAMP projects provided by PAP/RAC can be a good programme in the Mediterranean to embody ICZM into sensible and demonstrative projects.

All coastal agencies and organizations working for the coastal protection in the Mediterranean Region prepared Antibes Declaration on 25th of September, 2015 in the Coast Day [10]. They presented to continue working on sustainable management of coastal areas with the cooperation at local, national and international levels. They declared their awareness of threats and pressures of global climate change and they committed to adapt ICZM protocol in the coastlines and to contribute the implementation of public policies on coastal management by reducing the vulnerability to coastal risks with mitigation planning. They committed to reduce greenhouse gas emissions and to promote a dynamic and ecologic management of the coastal ecosystems. They will support the development of responsible and sustainable socio-economic activities in agriculture, fishing, tourism by developing infrastructures on water, waste and energy.

This paper emphasizes a future Mediterranean coast to be:

- resilient to climate change, natural and man-made disasters,
- productive and rich, participatory, energy-saving,
- diverse in ecological terms, green and blue,
- distinctive culturally,
- attractive to visitors, investors and local people,
- healthy and clean.

## CONFLICT OF INTEREST

No conflict of interest was declared by the author.

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