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Athens, Greece, 9-12 February 2016

Agenda item 3: Thematic Decisions

Draft Decision: Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas

Note by the Secretariat

This Note by the Secretariat accompanies the draft Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas ("the Framework"), which is submitted for adoption by the 19th meeting of the Contracting Parties to the Barcelona Convention (Athens, Greece, 9-12 February 2016). It provides information regarding the objective of the Framework, its mandate, background, inter-linkages with the MAP/Barcelona Convention and their instruments, and the process of its development. It also summarizes the involvement and position of the Union for the Mediterranean (UfM) as expressed in a number of formal events during the preparation of the Framework.

This Note responds to the request of the MAP Focal Points at their meeting in Athens, Greece, on 13-16 October 2015.

Objective and Scope of the Framework

Climate change is arguably one of the most critical challenges that the Mediterranean region is facing. The Mediterranean basin has been identified[1] as one of the two most responsive regions to climate change globally. The recent IPCC Fifth Assessment Report considers the Region as "*highly vulnerable to climate change*", also mentioning that it "*will suffer multiple stresses and systemic failures due to climate changes*"[2]. The overall risks of climate change impacts can be reduced through mitigation, i.e. by limiting the rate and magnitude of climate change. However, even under the most ambitious mitigation scenarios, risks from adverse climate impacts remain due to already locked-in climate change. Therefore, adaptation policies and measures anticipating a wide range of potential climate-related risks are essential.

Currently, responses to climate-related pressures and hazards are often limited to short-term and reactive local emergency measures. However, building environmental and socioeconomic resilience against climate change at the regional level is about pro-active, longer term and integrated planning that addresses existing aspects of unsustainable development as drivers of vulnerability and guides the economic development of the region in a more sustainable direction. As climate risks extend well past territorial boundaries, a cross-border collaborative and coordinated regional approach to adaptation is required, promoting synergies with other multilateral environmental agreements.

The main objective of the Framework is to define a regional strategic approach to increase the resilience of the Mediterranean marine and coastal natural and socioeconomic systems to the impacts of climate change, assisting policy makers and stakeholders at all levels across the Mediterranean in the development and implementation of coherent and effective policies and measures. The Framework is not meant to be an action plan for the MAP system, but a structured outline that is offered to facilitate the identification of strategic objectives, strategic directions and priorities for adapting to climate change by policy makers and stakeholders in the Mediterranean region.

The development of the draft Framework is guided by the vision that by 2025 the Marine and Coastal Areas of the Mediterranean countries and their communities have increased their resilience to the adverse impacts of climate variability and change, in the context of Sustainable Development. This is to be achieved through common objectives, cooperation, solidarity, equity and participatory governance.

Its focus, coherently with the legal framework set by the Protocols of the Barcelona Convention, is on the marine and coastal environments of the Mediterranean. The geographical scope of the Framework is that of the Barcelona Convention, that is the Mediterranean Sea and the coastal zones of the 21 countries that border it. The Framework recognizes that climatic changes will have impacts that do not

[1] Giorgi, F. (2006), Climate change hot-spots, Geophysical Research Letters, 33, L08707
[2] IPCC, Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects. Chapter 21.5.1.2. Hotspots

respect the boundaries of a coastal zone as it is usually defined and that coastal adaptation actions may be required further inland, in particular in inland watersheds.

Climate Change Adaptation in the Mediterranean: Background

The Framework is accompanied by a Background document[3] that provides a detailed overview of the issues, the challenges and the current status regarding the adaptation to climate change of the Mediterranean Marine and Coastal Areas.

The Background document provides an overview of key concepts and perspectives around adaptation to climate change, in particular: (i) the major activities under the UNEP/MAP system relevant to climate change in the Mediterranean region; (ii) an overview of the latest scientific knowledge on how the region's climate is changing and how it is predicted to change in the course of the century; (iii) an overview of the current status of knowledge regarding the risks and vulnerabilities of the region's natural and human systems in the face of climate change, and the methodology and results of the application of a Coastal Risk Index at the regional and local scale in the Mediterranean that was carried out in the context of the ClimVar & ICZM project; (iv) the international adaptation-related developments under the UNFCCC process, the current status of the national adaptation legislative framework in the countries of the Mediterranean and the relevant international and regional initiatives; (v) four dimensions or approaches that any adaptation strategy should consider as a priority, namely the implementation of low-regret measures, the synergies between adaptation and both disaster risk management and mitigation, the integration of adaptation perspectives into ICZM, and the use of Ecosystems-based adaptation approaches; and (vi) the international climate financing framework under the UNFCCC as well as the other international funding opportunities relevant to the Mediterranean region. It also provides a brief discussion on what prioritizing adaptation financing means at the national level as well as on the role of the banking and insurance sectors.

Analysis of References with MAP/Barcelona Convention Instruments

The Framework is also accompanied by an Analysis document of the inter-linkages between the draft Framework and MAP, Barcelona Convention, Protocols and related strategies and potential contributions for their implementation[4]. The Analysis document identifies the interlinkages between the MAP policy and regulatory and programmatic documentation and the Framework, so as to highlight the existing mandates and ongoing work and the way in which the draft Framework reflects them. The documents that were analyzed include the Mediterranean Action Plan, the Barcelona Convention and its seven Protocols, Declarations of the Contracting Parties Meetings and other relevant meetings, MAP Strategies and Action Plans, Components of the Mediterranean Action Plan, and Studies on climate change issues prepared by the Regional Activity Centres.

The analyzed documents are of different nature, concept and content. The Mediterranean Action Plan, the Barcelona Convention and four of the seven Protocols were adopted twenty years ago and thus it is no surprise that climate change issues are not explicitly covered in most of them. There is however no doubt that responses to climate change are essential to meet the objectives and obligations of the Barcelona Convention, i.e. the protection of the marine and coastal environment of the Mediterranean region and the contribution to its sustainable development.

The general conclusion of this analysis is that there are strong interlinkages between the Framework and the majority of the existing instruments and documents and that there is clear potential that the Framework could significantly contribute to their implementation. This is particularly important also in

[3] UNEP(DEPI)/MED IG 22/Inf.11 - Background document to the Regional Climate Change Adaptation Framework

[4] UNEP(DEPI)/MED IG 22/Inf.12 - Analysis on how Regional Climate Change Adaptation Framework priority fields of action and climate-related issues in general are already reflected in Protocols and other strategic instruments of the MAP

light of the 2030 Agenda for Sustainable Development and the SDGs (adopted in New York in September 2015), as well as the outcome of the UNFCCC Climate Change Conference of December 2015 in Paris, France. It is also clear from the analysis that most of the MAP Regional Activity Centres are already quite active and producing very good results in the work on various aspects of climate change and its impact.

Mandate for the Framework

UNEP/MAP has been supporting the assessment of, and responses to the threats posed by climate change on the Mediterranean marine and coastal zones dating back to the publication in 1992 of "Climate change and the Mediterranean: environmental and societal impacts of climatic change and sea level rise in the Mediterranean region". Several of the Regional Activity Centers of UNEP/MAP have since then undertaken relevant studies on the impacts of climate change on Mediterranean biodiversity, and identifying climate change-related risks in coastal zones.

The initial mandate for the development of the Framework goes back to the 13th Meeting of the MCSD (Cairo, 2009) which encouraged "*The development of an action oriented regional approach for adaptation*". Two months later, at the 16th meeting of the Contracting Parties to the Barcelona Convention in 2009, the "Marrakesh Declaration" adopted by Ministers of Environment and Heads of Delegations agreed to "*Promote Mediterranean cooperation to combat the effects of climate change in the region and enhance the institutional mechanisms*" and to "*Implement effective coordination to ensure the integration of climate change issues into development policies with the aim of achieving the Millennium Development Goals and the objectives of the MSSD, and ensure the strengthening of cooperation for the sharing of experience in the field of surveillance (early-warning systems) and the development and implementation of adaptation and risk-management strategies*". The Five-Year Programme of Work 2010-2014 that was adopted in the same meeting was built on six Themes, one of which was climate change. Output II under this Theme was "*Reduced socio-economic vulnerability*" and one of the Indicative Activities was to "*Support development of the Marine and coastal dimensions of regional/national strategies on adaptation*".

UNEP/MAP started preparing a "Regional Framework for Climate Change Adaptation in the Mediterranean" that was presented as "work in progress" to the 14th Meeting of the MCSD in Budva, Montenegro in 2011 where the Commission acknowledged the need for such a Framework. The document wasn't further developed due to lack of resources.

In 2012 the GEF Secretariat endorsed the "Integration of climate variability and change into national strategies for the implementation of the ICZM Protocol in the Mediterranean" (ClimVar & ICZM) project. The project's Steering Committee on February 2013 agreed that one of the activities of the project would support the finalization of the draft Adaptation Framework.

Decision IG.21/17 of COP 18 (Istanbul, Turkey, December 2013) on UNEP/MAP Programme of Work 2014–2015, mandated the preparation and submission to COP 19 of a Climate Change Adaptation Framework (Expected result 1.2.7).

Process of Preparation of the Framework

Work on the Framework started in mid-2014. The original draft from 2011 formed the basis of the work. Additionally, a review was made of all relevant adaptation strategies, including the European Commission's EU Strategy on adaptation to climate change, the Baltic Sea Region Climate Change Adaptation Strategy, and the Black Sea Economic Cooperation Climate Change Adaptation Strategy. Additionally, the Mediterranean countries' Communications to the UNFCCC were reviewed as well as major publications from UNEP and international institutions and initiatives such as the IPCC, the European Environment Agency, the World Bank, the EC's Joint Research Centre, the Regional Initiative for the Assessment of the Impact of Climate Change on Water Resources on Socio-Economic Vulnerability in the Arab Region (RICCAR) and others.

An essential aspect of the Framework is that it has been developed in a step-by-step consultation and review process through an *ad hoc* technical Advisory Panel involving key regional experts on climate adaptation, which was established in autumn 2014. The members of the Panel, suggested by partners of the MAP system, included representatives from international and regional organizations, academic and research institutions, NGOs, scientists, and financial institutions.

Consultations were held within the MAP system for the development of the Framework purpose and aims and its Table of Contents. Coordination and alignment with the climate related chapter of the revision of the MSSD was ensured from the beginning and especially during the Consultation Workshop in Sophia Antipolis in November 2014. Inputs to the Framework were also sought from the UfM Climate Change Expert Group during its meetings in October 2014 and May and October 2015.

On 9 April 2015 the Framework was shared for inputs and comments with national Focal Points of MAP and RACs, MCSD members and Focal Points of the MedPartnership project. On the basis of the feedback received, on 11 May 2015 an updated draft was submitted to the MCSD meeting in 9-11 June 2015.

The 16th Meeting of the Mediterranean Commission on Sustainable Development (MCSD), held in Marrakesh 9-11 June 2015, adopted the following recommendations regarding the Framework:

- The MCSD members and observers acknowledged with appreciation the high quality and the relevance of the Framework, and recognized its importance and the need for such an instrument. They emphasized the timeliness and significance of the Framework for the region, given the UNFCCC COP 21 in December 2015 and the fact that Morocco, current President of the MCSD will take also the presidency of COP 22 in 2016;
- The MCSD members welcomed the strategic objectives, correspondent operational objectives, and priority fields identified in the Framework and supported the initiative of MAP to develop an analysis on how the Framework's priority fields of action and climate-related issues in general are already reflected in Protocols and other strategic instruments of the MAP, in order to rationalize implementation;
- The MCSD members agreed to the need to ensure synergy between the strategic processes being developed by the MAP and the Framework, as it is already the case for the Climate Chapter of the MSSD;
- The MCSD members recommended submitting the Framework to COP 19 for its approval; and recommended that the approved Framework together with its background documents and the analysis mentioned in paragraph 19 should be the base for further discussion on how to translate the priorities defined by the Framework into action.

The draft Framework was submitted to the MAP Focal Points Meeting (Athens, 13-16 October 2015) for consideration and is being submitted to the 19th meeting of the Contracting Parties to the Barcelona Convention (COP 19).

Coordination with the Union for the Mediterranean (UfM)

Coordination with the UfM has been ensured since the beginning of the process. The UfM provides for the development of regional policy and action frameworks and projects including in response to climate change challenges.

The Declaration of the UfM Ministerial Meeting on Environment and Climate Change that took place in Athens, Greece on 13 May 2014 reads that the Ministers "*support the regional climate change adaptation framework under development by UNEP-MAP*". The Declaration of the UFM Ministerial Conference on Blue Economy held in Brussels, Belgium on 17 November 2015 also refers explicitly to the Framework as the Ministers "reconfirm the existing long-term objectives for sustainable

management of the sea and for a cleaner Mediterranean by the year 2020 as far as agreed by UfM Member Countries, as expressed in particular by the Barcelona Convention".

In the context of the above-mentioned Ministerial Conference of May 2014, the UfM Climate Change Expert Group (UfM-CCEG) and the UfM Working Group for Environment and Climate Change (UfM-WGECC) were established. The first meeting of UfM-CCEG was held in Barcelona, Spain (13-14 October 2014) under the co-presidency of the Hashemite Kingdom of Jordan and the EU. UNEP/MAP participated in the meeting as member to the CCEG and presented the process and the methodology, and invited the UfM and the members of the UfM-CCEG to be associated to the development of the Framework in light of the importance of this document and in the context of the MoU signed between UfM and UNEP-MAP to strengthen their collaboration.

At the second meeting of the UfM-CCEG held in Skhirat, Morocco (6-7 May 2015), UNEP/MAP presented a more advanced version of the RCCAF that included the comments received by the Contracting Parties to the Barcelona Convention, the members of the MCSD and the advisory panel of expert which contributed to its development and included UfM. The conclusion of the second UfM - CCEG meeting states that "*participants also supported the Regional Adaptation Framework elaborated by UNEP-MAP and invited UfM-CCEG and the UfM Secretariat to identify initiatives and action to complement and support it*".

At the third UfM-CCEG meeting held in Barcelona, Spain (1-2 October 2015), UNEP/MAP presented the version of the Framework that had been submitted to the MAP Focal Points Meeting (Athens, 13-16 October 2015). UNEP/MAP stressed the consistency between the Framework and the Mediterranean Strategy for Sustainable Development and the needs to cooperate with the UfM-CCEG on adaptation. In its conclusions, the third UfM-CCEG "*recognized the importance of integrated frameworks and strategies on adaptation; underlined the co-benefits and synergies between mitigation and adaptation, including water - energy food - ecosystems nexus; and supported UNEP/MAP Regional Climate Change Adaptation Framework; acknowledged its expected legally binding character, if adopted*".

It is evident from the above that the UfM Co-Presidencies – Jordan and the EU - and country representatives have also repeatedly expressed support to the development of the Framework both at the highest political Ministerial level and at the expert level and that the UfM Secretariat has been involved in and informed throughout the process. Furthermore, the UfM is expecting to use the Framework for the definition of its policies and work on climate change adaptation in the Mediterranean.

Draft Decision IG.22/6

Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas

[*The 19th Meeting of the Contracting Parties to the Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean, hereinafter referred to as the Barcelona Convention,*

Recalling the Protocol on Integrated Coastal Zone Management in the Mediterranean and especially its provisions on the protection of the coastal zone, of related economic activities and of specific coastal ecosystems, on the prevention and response to natural hazards and on the prevention and mitigation of the effects of coastal erosion;

Recalling the Mediterranean Strategy for Sustainable Development and especially its Priority Field of Action relating to the adaptation to the effects of climate change;

Recalling that the 13th Meeting of the Mediterranean Commission on Sustainable Development (Cairo, 2009) encouraged "*the development of an action oriented regional approach for adaptation*" and called on Contracting Parties *"to implement adaptation measures on an urgent basis with the view to strengthening the resilience of the Mediterranean region in the face of climate change"*;

Recalling the Marrakesh Declaration (Marrakesh, Morocco, November 2009) by which the Parties agreed to "*Promote Mediterranean cooperation to combat the effects of climate change in the region and enhance the institutional mechanisms*" and to "*Implement effective coordination to ensure the integration of climate change issues into development policies with the aim of achieving the Millennium Development Goals and the objectives of the MSSD, and ensure the strengthening of cooperation for the sharing of experience in the field of surveillance (early-warning systems) and the development and implementation of adaptation and risk-management strategies*";

Recalling the Decision IG.21/17 on Programme of Work and Budget of COP 18 (Istanbul, Turkey, December 2013), which includes the target "*Climate Change Adaptation Framework prepared by the Secretariat, reviewed by MCSD and submitted for consideration by COP19*" (Expected result 1.2.7);

Engaged to contribute to the development of appropriate and integrated plans for coastal zone management pursuant to Article 4, paragraph 1(e), of the United Nations Framework Convention on Climate Change;

Concerned about the findings of the 5th Assessment Report of the Intergovernmental Panel on Climate Change;

Aware that the environmental and socioeconomic systems of the Mediterranean marine and coastal zones are threatened by multiple climate change-related risks and that increasing their resilience to the effects of climate change is crucial to their sustainable development;

Recalling the support expressed to the development of the Regional Climate Change Adaptation Framework by the UfM through the Ministerial Declarations taken at their Meeting on Environment and Climate Change (Athens, Greece, May 2014) and on Blue Economy (Brussels, Belgium, 17 November 2015) respectively, and the conclusions of the three UfM Climate Change Expert Group Meetings;

Having considered the report of the 16th Meeting of the MCSD (Marrakesh, Morocco, June 2015), which acknowledged the quality and the relevance of the draft Regional Climate Change Adaptation Framework, and recognized its importance and the need for such an instrument;

Adopts the Regional Climate Change Adaptation Framework (herein after referred to as "the Framework"), contained in the Annex to this decision;

Urges the Contracting Parties to take into account and address the Framework's objectives and priorities in their national climate change adaptation strategies and plans;

Urges the Contracting Parties to further discuss on how to translate the priorities identified in the Framework into actions coherently with the existing and new strategic instruments of the MAP system;

Encourages all relevant intergovernmental organizations, donor agencies, industry, non-governmental organizations and academic institutions to address the priorities in the Framework by providing sufficient support, including funding as appropriate;

Requests the Secretariat to align the implementation of the Framework with MSSD, relevant Protocols of the Barcelona Convention, and MAP strategies and action plans;

Requests the Secretariat to identify and mobilize external resources to support Contracting Parties in enhancing their capacity and effectively face the challenges of climate change adaptation in the marine and coastal environment.]

ANNEX

Regional Climate Change Adaptation Framework for the Mediterranean Marine and Coastal Areas

TABLE OF CONTENTS

List of Abbreviations

EcAp	Ecosystem Approach
EEA	European Environment Agency
GCOS	Global Climate Observing System
GEF	Global Environment Facility
GLOSS	Global Sea-Level Observing System
ICZM	Integrated Coastal Zone Management
IPCC	Intergovernmental Panel on Climate Change
JRC	Joint Research Centre
LAS	League of Arab States
MAP	Mediterranean Action Plan
MCSD	Mediterranean Commission on Sustainable Development
MedGOOS	Mediterranean Global Ocean Observing System
MOON	Mediterranean Operational Oceanography Network
MSSD	Mediterranean Strategy for Sustainable Development
PoW	Program of Work
RCP	Representative Concentration Pathways
SREX	IPCC's Special Report on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation
UfM	Union for the Mediterranean
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change

Glossary of Terms

Adaptation[1]:	The process of adjustment to actual or expected climate and its effects. In human systems, adaptation seeks to moderate or avoid harm or exploit beneficial opportunities. In some natural systems, human intervention may facilitate adjustment to expected climate and its effects.
Climate change:	Climate change refers to a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcing such as modulations of the solar cycles, volcanic eruptions, and persistent anthropogenic changes in the composition of the atmosphere or in land use.
Climate variability[1]:	Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate on all temporal and spatial scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability).
Disaster risk management[1]:	Processes for designing, implementing, and evaluating strategies, policies, and measures to improve the understanding of disaster risk, foster disaster risk reduction and transfer, and promote continuous improvement in disaster preparedness, response, and recovery practices, with the explicit purpose of increasing human security, well-being, quality of life, and sustainable development.
Ecosystem Approach:	A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. An ecosystem approach is based on the application of appropriate scientific methods, focused on levels of biological organization, which encompass the essential structure, processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems.
Exposure[1]:	The presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected.
Hazard[1]:	The potential occurrence of a natural or human-induced physical event or trend or physical impact that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems, and environmental resources.
Integrated coastal zone management (ICZM)[2]:	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.
Impacts[1]:	Effects on natural and human systems of extreme weather and climate events and of climate change. Impacts generally refer to effects on lives, livelihoods, health, ecosystems, economies, societies, cultures, services, and infrastructure due to the interaction of climate changes or hazardous climate events occurring within a specific time period and the vulnerability of an exposed society or system.

[1] IPCC, 2014: Climate Change 2014: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.
[2] Protocol on Integrated Coastal Zone Management in the Mediterranean.

Low regret measures:	Low cost activities that yield benefits even in the absence of climate change. The implementation of these actions often constitutes a very efficient first step in a long-term adaptation strategy.
Maladaptation[1]	Actions that may lead to increased risk of adverse climate-related outcomes, increased vulnerability to climate change, or diminished welfare, now or in the future.
Resilience[1]:	The capacity of social, economic, and environmental systems to cope with a hazardous event or trend or disturbance, responding or reorganizing in ways that maintain their essential function, identity, and structure, while also maintaining the capacity for adaptation, learning, and transformation.
Risk[1]:	The potential for consequences where something of value is at stake and where the outcome is uncertain, recognizing the diversity of values. Risk is often represented as probability of occurrence of hazardous events or trends multiplied by the impacts if these events or trends occur. Risk results from the interaction of vulnerability, exposure, and hazard, following the IPCC AR5 WGII (2014).
Vulnerability[1]:	The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt.

INTRODUCTION

Purpose and scope of the Framework

1. The development of the Framework is guided by the following vision:

By 2025 the Marine and Coastal Areas of the Mediterranean countries and their communities have increased their resilience to the adverse impacts of climate variability and change, in the context of Sustainable Development. This is achieved through common objectives, cooperation, solidarity, equity and participatory governance.

2. The Mediterranean has long been identified as a global climate change hotspot, one of the two most responsive regions to climate change globally[3]. Currently, responses to climate-related pressures and hazards in the region are often limited to short-term and reactive local emergency measures. However, building environmental and socioeconomic resilience against climate change at the regional level is about pro-active, longer term and integrated planning that addresses the root causes of vulnerability and guides the economic development of the region in a more sustainable direction. The Mediterranean countries need to turn the challenges they face under a changing climate into opportunities to increase their resilience by addressing the reasons that have so far led many environmental parameters into almost critical status.

3. Climate risks extend well past territorial boundaries, and therefore so do the necessary measures to address them. A cross-border collaborative and coordinated approach to adaptation is in line with the UNFCCC's National Adaptation Plan process which among others urges countries to promote "*coordination and synergy at the regional level and with other multilateral environmental agreements*"[4] and additionally with the EU Strategy on Adaptation to Climate Change, which encourages EU countries to "*establish contact with neighbouring countries to inform about the adaptation process and areas of concern with regard to cross-border impacts and identify approaches for coordination over different political, legal and institutional settings*"[5].

4. The main objective of the Framework is to set a regional strategic approach to increase the resilience of the Mediterranean marine and coastal natural and socioeconomic systems to the impacts of climate change, assisting policy makers and stakeholders at all levels across the Mediterranean in the development and implementation of coherent and effective policies and measures by identifying strategic objectives, strategic directions and priorities that:
   - 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.

5. Its focus, coherently with the legal framework set by the Barcelona Convention and its Protocols, is on the marine and coastal environments of the Mediterranean. The geographical scope of the Framework is that of the Barcelona Convention and its Protocols, that is the Mediterranean Sea and the coastal zones of the 21 countries that border it. The Framework recognizes that climatic changes will have impacts that do not respect the boundaries of a coastal zone as it is usually defined and that coastal adaptation actions may be required further inland, in particular in inland watersheds.
   At national level the implementation of this strategic framework should be linked to the work carried under the Barcelona Convention, and complementary to the implantation of the ICZM protocol, MSSD implementation, and other relevant instruments.

[3] Giorgi, F. (2006), Climate change hot-spots, Geophysical Research Letters, 33, L08707
[4] UNFCCC Secretariat, Technical guidelines for the national adaptation plan process, December 2012.
[5] European Commission, Guidelines on developing adaptation strategies, April 2013.

6. The time scale of the Framework is in line with the MSSD 2.0, that is 2016-2025.

7. The Framework is structured around four Strategic Objectives. Each Strategic Objective includes separate Strategic Directions and suggested priorities for their realization.

8. The Framework builds upon and is supported by two reports prepared by the UNEP/MAP Secretariat. The "*Background document to the Regional Climate Change Adaptation Framework*[6]" provides an overview of key concepts and perspectives around adaptation to climate change, of the latest knowledge regarding the climate change-related challenges that the Mediterranean is facing, of the relevant national and international capacities and efforts, of recommended responses and approaches and of available and emerging financing options. In addition an "*Analysis on how Regional Climate Change Adaptation Framework priority fields of action and climate-related issues in general are already reflected in Protocols and other strategic instruments of the MAP*"[7] was prepared to show how climate change adaptation considerations have been taken into account throughout the Barcelona Convention's Protocols, strategies and plans, and to provide a basis on how the Framework can bring together these elements towards a coordinated approach towards enhancing the resilience of the Mediterranean marine and coastal environment to the impacts of climate change by ensuring marine and coastal environment conservation and good environment status (GES) is achieved.

Background – The Mediterranean Changing Climate

9. Climate change poses significant challenges to the Mediterranean countries and is expected to worsen already acute situations present in the region. Essential resources like fresh water, soil, agricultural production and fish provisions may become endangered while coastal communities, ecosystems and infrastructure will be challenged by increased physical risks. More importantly, human lives may become endangered, health risks increased and even stability compromised in a changing climate. A Mediterranean-wide response to these risks should reduce the vulnerability and exposure of the region's society, economy and ecosystems to climate-related hazards, and increase the overall resilience of the Mediterranean marine and coastal areas.

<u>The Region's climate is already changing</u>

10. Climate variability and change is becoming increasingly evident in the Mediterranean. According to observations and studies referenced in the recent IPCC Fifth Assessment Report (AR5)[8] and in IPCC's SREX Report[9], in recent decades, summer heat waves' intensity, number, and length have increased alongside extreme precipitation events and soil dryness. Major increases have been observed in warm temperature extremes. The shallow waters of the Mediterranean Sea have already warmed by almost 1°C since the 1980s. Trends of decreasing precipitation and discharge indicate a trend toward increased freshwater deficits. The Mediterranean also exhibits variability regarding the observed sea level rise. According to the latest EEA indicators assessment[10], in the Mediterranean Sea there are areas with increases of more than 6 mm/year, and with decreases of more than -4 mm/year.

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[6] UNEP(DEPI)/MED IG 22/Inf.11 - Background document to the Regional Climate Change Adaptation Framework

[7] UNEP(DEPI)/MED IG 22/Inf.12 - Analysis on how Regional Climate Change Adaptation Framework priority fields of action and climate-related issues in general are already reflected in Protocols and other strategic instruments of the MAP

[8] Working Group I Contribution to the 5th IPCC Assessment Report, Climate Change 2013 - The Physical Science Basis, http://www.ipcc.ch/report/ar5/wg1/

[9] IPCC, 2012: Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change.

[10] European Environment Agency, Global and European sea-level rise (CLIM 012) - Assessment published Sep 2014, http://www.eea.europa.eu/data-and-maps/indicators/sea-level-rise-2/assessment

Projections for the future

11. The IPCC AR5 considers the Mediterranean Region as "*highly vulnerable to climate change*" and states that it "*will suffer multiple stresses and systemic failures due to climate changes*". Different sub-regions of the Mediterranean will witness different changes to their climate. On average however for the whole Region, estimates mentioned in the IPCC AR5 for the medium-low emissions scenario (RCP 4.5) and for the period 2081-2100 compared to 1986-2005 include an increase in surface mean air temperature of 2-4ºC, 10-20% decreases in mean annual precipitation, increased risk of desertification, soil degradation, an increase in duration and intensity of droughts, summer heat-waves and heavy precipitation events, changes in species composition, increase of alien species, habitat losses and agricultural and forests production losses.

12. Sea level rise in the Mediterranean Sea involves local as well as global contributions. Thus multi-decadal regional projections involve larger uncertainties than those for the global ocean. A rise of 0.4-0.5m is projected for most of the Mediterranean under IPCC AR5's medium-low emission scenario RCP 4.5. The effect of sea level rise due to global warming is more important in most of the Mediterranean Sea where, due to the small tidal range, coastal infrastructure and coastal communities are located closer to mean sea level. In addition, vertical land movements caused by tectonic as well as other causes pose additional risks for such areas.

Overview of expected climate change-related risks

13. Climate change is expected to apply additional stresses on ecosystems and socioeconomic sectors and systems by modifying land degradation rates and the recurrence of droughts, floods and other extreme climate events, as well as through changes in temperatures, in the precipitation regime and in the level as well as the acidity of the sea.

14. *Natural and managed resources and systems*: The Mediterranean region is among the richest in biodiversity of global importance. However, many of its ecosystems have already been weakened by pollution, overexploitation, fragmentation of habitats, and biological invasions. Such stresses are expected to be amplified under climate change. The composition of most of the present marine and coastal ecosystems will probably change and there will be a greater risk of extinction of species, especially those with a restricted climatic distribution, those that need highly specific habitats and/or those small populations which are naturally more vulnerable to modifications in their habitats. Climate change is also expected to amplify biological invasions and proliferation of pathogens and diseases, fostered by the rise in temperature of the marine waters[11]. At the same time, sea acidification is currently occurring at an unprecedented rate, subjecting some marine organisms to an additional, and worsening, environmental stress[12]. The region's water resources are already subject to various interacting pressures such as rapid population growth, urbanization, tourism, alongside environmental degradation. These stresses would be multiplied under climate change because of projected declines in precipitation and runoff, and depletion of groundwater resources. Agriculture in the coastal zones will be affected by increased temperatures and land degradation, and reduced water availability, with significant decreases in some crop yields which could reach alarming levels under high emissions scenarios, threatening food security especially for poor communities. Changes in the geographical distribution of wild fish stocks can lead to possible decreased catch potential for some species. Climate change can also influence where aquaculture is possible, which species are raised, and the efficiency of the production. The coastal zones, which face high risks due to sea-level rise, host most of one third of the world tourism that visit Mediterranean countries. The region's coastal systems and low-lying areas would be subject to submergence and erosion due to increased sea-level rise and sea flood surges. Coastal aquifers, already overexploited, would become increasingly threatened by salt water intrusion due to rising sea levels and/or over-extraction.

[11] UNEP-MAP-RAC/SPA, 2010. Impact of climate change on marine and coastal biodiversity in the Mediterranean Sea: Current state of knowledge.
[12] Mediterranean Sea Acidification in a changing climate (MedSeA) Project.

Warming and reduced rainfall is expected to lead to a decrease in trees and plant growth while annual burned area due to forest and wild land fires is projected to significantly increase in many areas bordering the Mediterranean Sea.

15. *Human Settlements, Industry, and Infrastructure*: As coastal populations and assets in coastal areas continue to grow, exposure to climate change-related hazards –and especially those associated with sea-level rise- is also increasing. The key expected impacts of climate change in coastal urban areas include inland flooding; coastal flooding and storm surges in low-lying and unprotected coastal zones; heatwaves, exacerbated by the urban heat island effect; wind storms; water shortages and drought; enhanced air pollution; other geo-hydrological hazards, such as salt water intrusion and landslides. The crucial tourism industry could face negative consequences due to possible loss of beaches, natural attractions and tourism infrastructure, especially during the summer months because of heat waves, drought and the associated risk of fires. However, impacts on the sector will not be uniform across the region and occupancy rates may increase during spring and autumn. Port infrastructure, but also coastal roads, railways, and airports, are expected to be at risk mainly due to temporary and permanent flooding arising from sea-level rise, high winds and storm surges. Energy transmission infrastructure could be at risk; changes in water availability will affect hydropower generation and may lead to increased deployment of energy-intensive desalination options. Higher temperatures will increase the overall and peak demand for cooling in the summer months but at the same time reduce heating demand during the winter.

16. *Human Health, Well-Being, and Security*: The overall health effects of a changing climate in the Mediterranean are likely to be negative. Extreme high air temperatures contribute directly (through heat stress) and indirectly (through raised levels of ozone and other secondary pollutants) to an increase of the number of heat-related illnesses and deaths from cardiovascular and respiratory disease, particularly among elderly people, but also children, people with medical conditions, and the poor. Extreme heat also raises pollen and other aeroallergen levels which trigger asthma. Rising sea levels and increasingly extreme weather events may destroy homes, medical facilities and other essential services therefore increasing risks to public health. Lack of safe water can compromise hygiene and increase the risk of diarrheal disease while floods can contaminate freshwater supplies, heighten the risk of water-borne diseases, and create breeding grounds for disease-carrying insects, threatening especially those with already limited access to water and sanitation. Decrease in the production of staple foods will increase the prevalence of malnutrition and undernutrition and food insecurity in general, especially among those on low incomes. Finally, changes in the climate are likely to lengthen the transmission seasons of important vector-borne diseases and to alter their geographic range, while some toxic marine species could expand their distribution range.

17. *A threat Multiplier:* Finally, climate change could act as a threat multiplier in the Mediterranean region, predominantly in countries outside of the EU, by placing additional pressure on already scarce resources (especially water and land), reinforcing preexisting threats as political instability, poverty, and unemployment, and overstretching societies' adaptive capacities.

Other Relevant Policy and Institutional Frameworks and Initiatives

18. Alongside the activities ongoing under the auspices of UNEP/MAP-Barcelona Convention in relation to climate change adaptation, there exist various other regional initiatives, with which cooperation will be a necessity. For the purpose of this document, we mention the following ones.

19. The European Commission adopted in April 2013 the EU Strategy on Adaptation to Climate Change which identifies three priority areas: 1. Promoting action by Member States, through encouraging the adoption of comprehensive adaptation strategies and providing funding to help them build up their adaptation capacities. 2. 'Climate-proofing' action by further promoting adaptation in key vulnerable sectors and ensuring that Europe's infrastructure is made more resilient, and 3. Better informed decision-making by addressing gaps in knowledge about adaptation. The Commission states that priority will be given to adaptation flagship projects that address key cross-sectoral, trans-regional

and/or cross-border issues. In order to support the development and implementation of climate change adaptation strategies and actions in Europe, the European Climate Adaptation Platform Climate-ADAPT[13] has been launched since 2013.

20. The Union for the Mediterranean (UfM), is a multilateral partnership created in July 2008, consisting of the 28 member states of the EU and 15 other Mediterranean partner countries. Its climate-related policy framework provides for the development of regional policy and action frameworks and projects in response to climate change challenges. The decisions of the UfM Ministerial Conference on Environment and Climate Change (13 May 2014, Athens, Greece) aim at enhancing coherence of and promoting joint action within a Mediterranean climate change agenda. In that context, the UfM Climate Change Expert Group and the UfM Working Group for Environment and Climate Change were established.

21. The Arab Framework Action Plan on Climate Change, 2010-2020 which was elaborated in the League of Arab States (LAS) framework, aims at enhancing the Arab countries' capacity to take appropriate measures for addressing climate change issues while achieving sustainable development targets and MDGs in the Arab Region. Its adaptation focus is on:

- Vulnerability assessments of climate change impacts on economic and social development;
- Adaptation strategies in a range of sectors;
- Preparation and implementation of strategies for disaster risk reduction.

Linkages have been secured with other relevant LAS strategies such as the Arab Strategy for Disaster Risk Reduction 2020 and the Arab Water Security Strategy 2010-2030.

[13] http://climate-adapt.eea.europa.eu

THE FRAMEWORK'S OBJECTIVES, STRATEGIC DIRECTIONS AND PRIORITIES

22. The Framework is structured around four Strategic Objectives, each of them identifying several Strategic Directions with Priorities for consideration. The Strategic Objectives and Strategic Directions are presented below and elaborated in the following section:

1. *Appropriate institutional and policy frameworks, increased awareness and stakeholder engagement, and enhanced capacity building and cooperation:*
   - *1.1. Enhancing awareness and engagement of key stakeholders on climate adaptation*
   - *1.2. Promoting adequate institutional and policy frameworks*
   - *1.3. Promoting a regional approach on Disaster Risk Management*
   - *1.4. Improving implementation and effectiveness of adaptation policies through monitoring and reviewing progress*
   - *1.5. Integrating climate adaptation into local plans for the protection and management of areas of special interest*

2. *Development of best practices (including low regret measures) for effective and sustainable adaptation to climate change impacts:*
   - *2.1. Identifying adaptation needs and best practices*
   - *2.2. Mainstreaming, exchanging and adopting best practices*

3. *Access to existing and emerging finance mechanisms relevant to climate change adaptation, including international and domestic instruments:*
   - *3.1. Prioritizing public spending relative to climate adaptation and mobilizing national sources of climate finance*
   - *3.2. Accessing international financing*
   - *3.3. Building alliances with the banking and insurance sectors*

4. *Better informed decision-making through research and scientific cooperation and availability and use of reliable data, information and tools:*
   - *4.1. Understanding of the vulnerability of natural and socioeconomic systems and sectors and of possible impacts*
   - *4.2. Building capacities for and promoting the use of vulnerability and risk assessment at regional to local levels*
   - *4.3. Strengthening Science-policy interface and accessibility of related knowledge*
   - *4.4. Developing Regional climate information at a resolution suitable for adaptation planning*

Strategic Objective 1: Appropriate institutional and policy frameworks, increased awareness and stakeholder engagement, and enhanced capacity building and cooperation

23. Climate change and its impacts are placing Mediterranean stakeholders in the position that requires maximum coordination, harmonization and integration of different sectoral policies. In order to reach results, institutional capacities, relationships, policies and practices to assess and manage climate change risks and opportunities and national development goals must be strengthened. Coordination within and between national institutions on climate change adaptation in the coastal and marine areas is a necessary prerequisite to create an enabling environment for the formulation and implementation of efficient solutions to such a complex and cross-cutting problem.

Strategic Direction 1.1: Enhancing awareness and engagement of key stakeholders on climate adaptation

24. Public support and engagement is essential for the acceptance and implementation of adaptation activities. This will require an appreciation of the importance of the issues involved and the potential costs of inaction. Improving awareness on climate change, its impacts and adaptation options is something that must also permeate education, the business sector and local authorities. Building

awareness on the adaptation needs is a slow and complex process which requires immediate, sustained and well-resourced action. Competent civil society actors are valuable partners in this effort.

25. In this context priorities for consideration include:

i. Cross-party political interest, support and commitment.
ii. Integrated awareness campaigns addressed to the general public, public bodies and the private sector, communicating a consistent and effective message about climate change risks and adaptation options.
iii. Targeted awareness campaigns tailored for specific audiences, sectors or circumstances aiming to integrate adaptation measures in a most efficient way.
iv. E-learning and massive open online course (MOOC) programmes on climate change impacts in the Mediterranean.
v. Involvement of networks and organizations of stakeholders (including local authorities, civil society institutions, farmers, fishermen, tourism managers and coastal and marine protected areas managers) in order to promote awareness raising, provide salient information and enhance their ability to respond to hazard events.
vi. Involvement of journalists including through the establishment of a central information e-desk for the provision and communication of relevant information.

Strategic Direction 1.2: Promoting adequate institutional and policy frameworks

26. Planning for adaptation to climate change and increased resilience to its impacts should not be considered as a separate policy field, disconnected from other aspects of sustainable development, but should rather be integrated across development and economic strategies and plans. Support is required to develop the countries' capacities to use the available knowledge base in the decision making processes and access the right tools.

27. In this context priorities for consideration include:

i. Regional policy instruments to promote adaptation to the impacts of climate change. Assessment on how the Barcelona Convention can be a tool to assist countries build coastal resilience, and on the future implementation of its protocols and action plans in the light of climate change.
ii. Identification and addressing of relevant institutional, legal and cultural barriers to adaptation policies, beginning with the transposition of the concepts of "adaptation", "resilience", "vulnerability" and "risk" into legislative procedures.
iii. Support to countries to develop and adopt comprehensive national adaptation strategies and share them with neighboring countries.
iv. Support and guidance on best practices and integrated approaches to mainstream climate change considerations in developmental and environmental plans and strategies. Coordination between sectoral plans in order to derive synergies and co-benefits and avoid maladaptation.
v. Integrated approach for the reduction of non-climate related threats that have a strong influence on risk and undermine the capacities of communities and ecosystems to adapt to climate change (water pollution, overfishing, sand mining, damming).
vi. Strategic Environmental Assessment, including the assessment of climatic factors and adaptation implications, for all major plans and strategies.
vii. Risk and Impacts assessment in relation to climate change prior to major infrastructure investments in coastal and marine areas.
viii. Maritime planning process, taking into account land-sea interactions, including climate change effects.

Strategic Direction 1.3: Promoting a regional approach on Disaster Risk Management

28. Despite many overlaps, Disaster Risk Management (DRM) and adaptation have traditionally evolved separately, but recently, the two approaches are increasingly being linked. As climate change and socioeconomic trends boost the number of people exposed to hazards such as floods and heatwaves, improved early warning systems and greater coordination of disaster management activities will be needed to manage risks and protect lives and property.

29. In this context priorities for consideration include:

i. Integration of regional climate related data into disaster risk management.
ii. Regional and transboundary cooperation and assistance to cope with climate-related extreme events and emergency situations.
iii. Exchange of best practices on disaster risk management in the region.
iv. Innovative climate services and products to inform Risk Management, tailored to the needs of key public and private stakeholders.
v. National and regional contingency plans to handle crisis situations, incorporating environmental, social and economic aspects.

Strategic Direction 1.4: Improving implementation and effectiveness of adaptation policies through monitoring and reviewing progress

30. Appropriate measurement and reporting of the progress towards achieving the objectives of Adaptation policies and plans, at both the national and regional level, is essential for effectiveness, transparency and accountability. It is therefore necessary that adaptation policies are designed as a continuous and flexible process, including feedback through monitoring and evaluation, both in terms of the validity of the underlying scientific assumptions and of the appropriateness and effectiveness of projects and policies.

31. In this context priorities for consideration include:

i. Reporting on the implementation of national climate adaptation policies related to the coastal and the marine environment is made under the ICZM protocol or MSSD process.
ii. Identification of responsible institutions for monitoring progress and adequate monitoring and review mechanisms in place at sectoral and local levels. Availability of good quality relevant data.
iii. Development of a monitoring and evaluation framework including objectives, benchmarks, indicators and timescales for reviews to take place.
iv. Dynamic updating and refining of adaptation plans as experience increases and more data on impacts becomes available.

Strategic Direction 1.5: Integrating climate adaptation into local plans for the protection and management of areas of special interest

32. Not all marine and coastal areas of the Mediterranean face the same climate-related risks. Some areas may exhibit special characteristics that render them particularly vulnerable to climate hazards, others may host very significant socioeconomic assets exposed to climate change impacts, while others have an iconic or special interest status. Early planning and implementation of adaptation measures in such areas should be a regional priority.

33. In this context priorities for consideration include:

i. Identification of areas of special interest (such as heritage sites, nature reserves, biodiversity and other kinds of hotspots, coastal mega-cities, river deltas etc.) and undertaking of risk assessment for various climate change scenarios.

ii. Development of methodologies and guidelines at the regional level for the integration of climate adaptation dimensions into their development and management plans, using Ecosystems-based Adaptation and ICZM as priority tools.

Strategic Objective 2: Development of best practices (including low regret measures) for effective and sustainable adaptation to climate change impacts

34. Improved knowledge and understanding is essential for more reliable forecasts of future conditions that would guide policy makers. However, uncertainty will remain inherent to adaptation decision making. But there exist low-regret measures with proven effectiveness and practically no negative side effects the implementation of which should not be delayed while waiting for more certain information and knowledge to be available. Many of these low-regret measures produce co-benefits, help address other development goals, and help minimize the scope for maladaptation.

Strategic Direction 2.1: Identifying adaptation needs and best practices

35. In the face of identified key climate risks (and opportunities) for a country or a region, decision makers need to focus on the most pressing needs and the best available and most efficient options to manage these risks.

36. In this context priorities for consideration include:

i. Identification by countries of their adaptation needs for the coastal and marine environment and of relevant technology needs and inclusion in their National Adaptation Plans.
ii. Criteria to identify, select and prioritize the most effective best practices and adaptation options in the coastal and marine environment.
iii. Identification and addressing of challenges and constraints for the transfer and adoption of best practices (including low-regret measures) and technologies across the Mediterranean basin.

Strategic Direction 2.2: Mainstreaming, exchanging and adopting best practices

37. In this context priorities for consideration include:

i. Mainstreaming and implementation of best practices into national adaptation planning processes.
ii. Maximization of synergies with relevant mitigation efforts (eg climate smart agriculture and forestry, energy efficiency in buildings, “blue carbon” policies etc) and minimization of possible conflicts.
iii. Local authorities and communities to implement adaptation actions tailored effectively to localized impacts of climate change including innovative, grass root responses and applying participatory science to monitor progress.
iv. Ecosystem based Adaptation approaches, the ICZM Protocol and the SAP/BIO as priority policy tools for encouraging adaptation efforts.
v. Innovative information sharing tools for the exchange of best practices and stakeholders' engagement.

Strategic Objective 3: Access to existing and emerging finance mechanisms relevant to climate change adaptation, including international and domestic instruments

38. In the face of a changing climate and related risks, the cost of inaction can be huge. The measures to increase the resilience of our natural and socioeconomic systems should therefore not be considered as economic costs but rather as investments that are even economically profitable as they reduce risks and expected damages and losses, while at the same time exploiting opportunities towards sustainable development. Even if global emissions are cut to the level required to keep global

warming below 2°C thus avoiding the most catastrophic consequences of climate change, the total costs of adaptation could exceed $250 billion per year by 2050, according to UNEP's Adaptation Gap Report. Such financial resources should not be expected to come from only one or a few sources. For developing countries, international assistance could be the primary source but mobilizing public and private funds domestically is essential.

Strategic Direction 3.1: Prioritizing public spending relative to climate adaptation and mobilizing national sources of climate finance

39. Country-led approaches are essential for a strategic allocation of funds to key areas, especially taking into account that national sources are expected to cover most of the costs of adaptation measures. Beyond public resources, the involvement of the private sector which could be essential for the sharing of investments costs, risks, rewards and responsibilities, needs to be fully tapped. Existing and emerging economic instruments can foster adaptation by providing funds as well as incentives for anticipating and reducing impacts. It should be noted that mainstreaming climate-related considerations into sectoral policies would also allow to pursue adaptation objectives partially relying on already available financial resources.

40. In this context priorities for consideration include:

i. Review of the national portfolio of response options in order to efficiently and effectively allocate funds, e.g. through a Climate Public Expenditure and Institutional Review.
ii. Economic valuations of the costs of climate change as foundation for governments to allocate national funding on adaptation.
iii. Avoidance of maladaptive actions and non-efficient "hard" infrastructures to low-regret measures that improve climate resilience.
iv. Appropriate share of public spending to climate adaptation measures as part of an integrated sustainable development agenda.
v. Socially sensitive and transparent public-private partnerships for adaptation action encouraging the involvement of the private sector in related schemes.

Strategic Direction 3.2: Accessing international financing

41. The Contracting Parties to the UNFCCC have set up a number of funding mechanisms for channeling the international assistance envisaged in the Convention, such as the Adaptation Fund and the Green Climate Fund. Funds have also been set up through multilateral agencies such as the World Bank. On July 2015, UNEP was accredited as a partner institution to the Green Climate Fund, thus opening new opportunities and enhancing capacities for adaptation-related activities.

42. More specifically in the Mediterranean context, international financing for adaptation measures can be available through international banking institutions such as the European Investment Bank / Facility for Euro-Mediterranean Investment and Partnership, the European Bank for Regional Development, the Global Environment Facility, the African Development Bank and the Islamic Development Bank. However, many countries in the region are not yet fully prepared to take advantage of opportunities offered by existing and emerging financing instruments related to adaptation.

43. In this context priorities for consideration include:

i. Supporting countries' capacities to prepare schemes and proposals in order to effectively access and manage international and regional funding for climate change adaptation.
ii. Maximization of multilateral funding for areas of common interest and concern.
iii. Coordination mechanisms between donors and key actors in the Region and beyond in order to agree on an integrated funding strategy and priorities, for avoiding overlapping or duplication of efforts and activities.

iv. Feasibility and potential of a regional approach to risk transfer mechanisms.
v. Innovative financing mechanisms such as the issuance of Green Bonds, carbon markets, biodiversity offsets, etc.

Strategic Direction 3.3: Building alliances with the banking and insurance sectors

44. Integrating risk management into business practices could be best achieved through pricing it. Communicating risks associated with climate change through pricing may impact on awareness better than any other communication tool. Therefore, alliances between government, banks and the insurance sector could result with smarter risk management and reduced future climate related costs for the society.

45. In this context priorities for consideration include:

i. Integration of climate risk management into business and management practices.
ii. Cooperation with the insurance (including re-insurance) and banking sectors in the Mediterranean countries.
iii. Standardized international metrics related to climate risk and exposure.
iv. Assessment of reinsurance and insurance practices in the Mediterranean countries, exchange of best practices and provision of targeted information for different coastal stakeholders.

Strategic Objective 4: Better informed decision-making through research and scientific cooperation and availability and use of reliable data, information and tools

46. Decisions on adaptation policies should be informed by scientific research into the changes in the climate system, the impacts of climate change, the vulnerabilities of natural and socio-economic systems to those impacts and the effectiveness of adaptation options.

Strategic Direction 4.1: Understanding of the vulnerability of natural and socioeconomic systems and sectors and of possible impacts

47. In order to formulate informed, effective and sustainable adaptation strategies and plans, it is vital that knowledge is developed and uncertainties are reduced, especially regarding the understanding of ecosystem-scale interactions and of socioeconomic consequences, including the socio-cultural specificities of the Mediterranean communities. Thematic and sectorial assessments have been carried out in the past years by various institutions and a significant body of knowledge exists that can be built upon. However, more coordination is needed, knowledge gaps still need to be addressed and socioeconomic trends and scenarios need to be assessed. Better approaches and methods to identify key vulnerabilities and major risks are required in order to prioritize the actions.

48. In this context priorities for consideration include:

i. Sensitivity and adaptive capacity of marine species and ecosystem responses to changes and cumulative impacts in oceanic conditions, including the introduction of alien species.
ii. Mapping of coastal and marine ecosystems and assessment of the role of services they provide to climate resilience.
iii. Environmental and socio-economic vulnerability of Marine Protected Areas.
iv. Sea level rise and salt water intrusion affecting groundwater resources and wetlands.
v. Current and wave patterns, and sediment movement affecting shoreline dynamics.
vi. Subsidence of certain coasts.
vii. Water resources and the water cycle.
viii. Vulnerability and interactions of socioeconomic systems and sectors such as: Agriculture and forestry; Water resources management; Health; Tourism; Urbanization; Fisheries; Energy; Transport and trade; and Key infrastructure.

ix. Combined effects and interactions of climate change and socioeconomic dimensions and trends and scenarios, taking into account the socio-cultural specificities of the Mediterranean communities, such as:
Migration; Demographics; Conflict and social stability; Gender; and Vulnerable groups (e.g. children, older people, and indigenous populations).

x. Assessment of potential positive consequences and opportunities to different sectors from a changing climate.

Strategic Direction 4.2: Building capacities for and promoting the use of vulnerability and risk assessment at regional to local levels

49. In order to support policy makers at the regional, national and local levels, capacities and tools need to be developed for a better understanding of climate change risks, of options for adaptation, and of how climate change adaptation links to national development goals. The risks, which compose of hazard, vulnerability and exposure, need to be assessed in all dimensions: environmental (biodiversity losses of marine and coastal ecosystems), social (health, mortality) and economic (potential losses in all sectors). Direct and indirect effects of climate forcing on natural hazards must be explored and disentangled. Special attention should be given to the vulnerability component of risk where the level of uncertainties is much higher.

50. Despite the fact that the Mediterranean is a global climate hotspot, the region has been rather under-investigated in terms of comprehensive analyses and assessments. Numerous sub-regional projects and initiatives exist whose results need to be brought together in a consistent way in order to move towards the development of a complete and integrated Risks and Vulnerability Assessment for the whole Mediterranean region.

51. In this context priorities for consideration include:

i. Understanding of the drivers, interactions, impacts and responses within the socioeconomic and environmental nexus.
ii. Integrated risk and vulnerability models introducing socioeconomic feedbacks.
iii. Economic valuations of the costs of climate change impacts on vulnerable sectors and hotspots.
iv. Development of easy-to-use risk assessment methods such as index-based methods to be applied at regional, national and local levels.
v. Technical assistance and capacity building activities to competent local and national institutions and civil society organizations for the monitoring of climate change impacts and assessing the cost of adaptation options.
vi. Georeferencing of the Mediterranean Sea and coasts and their resources and threats.
vii. Auditing of strategically important coastal assets and assessment of their vulnerability.
viii. University Departments, curricula and modules on climate change issues and exchange programmes for adaptation scientists.

Strategic Direction 4.3: Strengthening science-policy interface and accessibility of related knowledge

52. The strengthening of adaptive capacities requires an increasing systematization and communication of scientific and traditional knowledge, as well as their integration into public policies and programs. However, institutional and cultural barriers between researchers, policy-makers and the public that hinder the transformation of knowledge into plans and actions still remain a challenge in the Mediterranean. There is a need to pay more systematic attention to strengthening the science/policy interface, and to recognize the three way relationship between scientists, policymakers and the public, as well as the leveraging role that civil society plays.

53. In this context priorities for consideration include:

i. Strategy for communicating scientific and other types of knowledge to policy makers at all levels as well as key stakeholders.
ii. Process for science-policy-business-community-managers dialogues at and between all governance levels, both regionally and nationally.
iii. Development of a Mediterranean Regional Network under the UNEP-facilitated Global Adaptation Network in order to share lessons, knowledge and information and highlight research and guidance needs and priorities.
iv. Regional Clearinghouse / repository of best practices and relevant reports and publications.

Strategic Direction 4.4: Developing regional climate information at a resolution suitable for adaptation planning

54. In order for scientists and stakeholders to be able to assess the impacts of climate change and develop adaptation plans it is essential that they have access to the best possible information from observation systems that monitor the climate system and detect and attribute climate change.

55. The countries of the Mediterranean have national observation and monitoring systems of varying data quality and availability, with northern countries enjoying more long-term and high-quality climate data than southern ones. Nevertheless, monitoring systems related to marine ecosystems (biotic and abiotic components) in the coastal and open waters are still lacking. Infrastructure, spatial coverage and data issues at the national level are challenges that need to be addressed. Crucial coordination issues, however, are also essential to be addressed at the regional level.

56. In this context priorities for consideration include:

i. Availability of environmental and socioeconomic data required for adaptation, including the maintenance and modernization of monitoring programmes and networks in the region.
ii. Sharing and standardization of collection, quality and storage, of all data relevant to adaptation planning, following WMO Resolution 40[14].
iii. Regional information platform that will contain information on climate change monitoring and research, interconnecting or harvesting information from relevant databases and platforms.
iv. Development of regional climate models integrating socioeconomic trends and threats.
v. A strategic approach to climate adaptation research in the region involving academic, industry and government bodies and their partnerships.

[14] https://www.wmo.int/pages/about/Resolution40_en.html