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INTEGRATION OF CLIMATIC VARIABILITY AND CHANGE INTO NATIONAL STRATEGIES TO IMPLEMENT THE ICZM PROTOCOL IN THE MEDITERRANEAN

INCEPTION REPORT

Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem
MedPartnership

Together for the Mediterranean

Together for the Mediterranean Sea

UNEP/MAP
Athens, 2014

Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem

MedPartnership

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INCEPTION REPORT

October 2013

UNEP MAP gef Plan Bleu PRIORITY ACTIONS PROGRAMME Global Water Partnership Mediterranean

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- Budget revision for the Climate Variability project (document number UNEP(DEPI)/MED WG. 389/5)

List of Abbreviations

APAL	Agence de Protection et d'Aménagement du Littoral
APR	Annual Project Report
CAMP	Coastal Area Management Programme
CCA	Carrying Capacity Assessment
CLIM-RUN	Climate Local Information in the Mediterranean Region Responding to User Needs
COMJSD	Circle of Mediterranean Journalists for Sustainable Development
COMPSUD	Circle of the Mediterranean Parliamentarians for Sustainable Development
COP	Conference of Parties
CV&C	Climate Variability and Change
DIVA	Dynamic and Interactive Vulnerability Assessment
ENSO	El Niño Southern Oscillation
EU	European Union
GEF CEO	Global Environment Facility Chief Executive Officer
GEF IW	Global Environment Facility International Waters
GHG	Green House Gas
GWP-Med	Global Water Partnership Mediterranean
ICZM	Integrated Coastal Zone Management
IMF	Integrated Methodological Framework
IPCC	International Panel on Climate Change
IWG	Integrated Working Group
IWRM	Integrated Water Resources Management
MAP	Mediterranean Action Plan
MCCI	Mediterranean Climate Change Initiative
MCSD	Mediterranean Commission on Sustainable Development
M&E	Monitoring & Evaluation
MEReS	Mediterranean Environmental Replication Strategy
MIO-ECSDE	Mediterranean Information Office for Environment, Culture and Sustainable Development
MP	Member of Parliament
NAO	North Atlantic Oscillation
NGO	Non-Governmental Organisation
NSSD	National Strategy for Sustainable Development
PAP/RAC	Priority Actions Programme Regional Activity Centre
PB/RAC	Plan Bleu/Regional Activity Centre
PEGASO	People for Ecosystem-based Governance in Assessing Sustainable development of Ocean and coast
PIR	Project Implementation Review
PMU	Project Management Unit
PoW	Programme of Work
SDI	Spatial Data Integration
SEIS	Shared Environmental Information System
SIMEDD	Mediterranean Information System on Environment and Development
SWIM	Sustainable Water Integrated Management

SWM	Strategy for Water in the Mediterranean
TDA	Trans-boundary Diagnostic Analysis
TNA	Technological Needs Assessment
TOR	Terms of Reference
UfM	Union for the Mediterranean
UNDP	United Nations Development Programme
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO-IHP	United Nations Education, Science and Communication Organisation-International Hydrological Programme
UNFCCC	United Nations Framework Convention on Climate Change
USAID	United States International Development Aid
WMO	World Meteorological Organisation

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1 Introduction and Background

1.1 Scope and format of the Inception Phase

1. The Inception Phase is the first major stage in the implementation of any project. The "Integration of climatic variability and change into national strategies to implement the ICZM Protocol in the Mediterranean" project (in further text: the "ClimVar & ICZM" Project) has been in the making since 2009, was developed in 2010 and 2011 and endorsed by GEF CEO in January 2012. In a region where the context and new parallel initiatives are constantly evolving, it is reasonable to expect that there might have been some change in scope of the approved project document compared to the initial assumptions. The Inception Phase and the Inception Report, as its major output, provide important means of taking stock of these changes through reviewing the current prevailing conditions for achieving project objectives in comparison with the activities originally proposed. The Inception Phase of the project officially started from GEF CEO approval in January 2012, although work started from March 2013 onwards with the recruitment of a consultant to assist in the initial preparation of the Inception Report.

The Inception Phase has been extended, in parallel to the execution of initial activities, and ended in October 2013, with the completion of this report. Therefore all information presented here stand valid up to October 2013.

2. The overriding goal of the Inception Phase is to achieve familiarity of all stakeholders and project partners with the objectives, activities and deliverables of the project. In that context, the specific objectives of the Inception Phase could be stated as follows:

- To plan co-ordination of actions to be undertaken by all 4 project co-executing agencies (UNEP/MAP, PAP/RAC, Plan Bleu and GWP/Med);
- The Inception Phase is the opportunity for the executing agency, i.e. UNEP/MAP to take ownership of the Project's goals and objectives and establish close working relationships with all co-executing agencies;
- To adjust the overall work plan and budget, following eventual programming changes;
- To finalize the Project's work plan, budget and list of meetings and other events;
- Based on the above, revise the Results Framework and Monitoring and Evaluation (M&E) plan if needed;
- To make all parties acquainted with their roles, functions, and responsibilities within the Project's decision-making structures, including reporting and communication lines; and
- To finalise all legal agreements necessary for the implementation of the Project.

3. The outcomes of the Inception Phase were the following:

- UNEP/MAP and the MedPartnership's management team (PMU) took full ownership of the Project;

- The Roadmap for the first year of the Project's implementation was prepared and adopted;
- Discussions and consultations between Project partners and relevant stakeholders at the regional and national levels undertaken;
- Agreements with Project partners were signed;
- The implementation of a number of actions started; and
- The Inception Report finalized, endorsed by the MedPartnership Steering Committee and disseminated.

1.2 Scope and format of the Inception Report

4. The purpose of the Inception Report is to provide additional clarity on the project and, eventually, revise activities, outputs, indicators etc should there be too many changes from the original context of the project. The Report also aims at facilitating integration among Project's components and providing more detailed instructions for the implementation of the project. The objective of the Inception Report will be to harmonize, interrelate and integrate actions to be implemented within individual Project's activities. The Inception Report will be essential in guiding the Project implementation process over the succeeding phases of activities. The information contained in the Inception Report and in the accompanying annexes is supposed to be a complement to the Project Document. However, to be more specific, it should be stated that the Inception Report aims to do the following:

- To provide an agreed statement of the overall work programme and budget, i.e. the revised overall and first year work plan and timetable of the activities to be implemented, to be endorsed by the MedPartnership Steering Committee meeting;
- To develop, where necessary and/or feasible, the methodologies, tools and techniques to be applied;
- To outline elements of the regional context and point to complementary issues, which the Project should take in consideration in the subsequent phases of its implementation;
- To indicate eventual additional risks to those that have already been elaborated in the Project Document, and point to activities where increased efforts will have to be employed soon after the Inception Report will be finalized.

1.3 Background and History of the Project

5. The countries of the Mediterranean recognize that with current projections there will be a number of climate impacts, including increased summer temperatures and decreased annual precipitation, increased water-related extreme phenomena like floods and persistent droughts, enhanced water scarcity and increased desertification, the loss of, or shift in vegetation zones, threatened food production as a result of increased irrigation demands and more numerous incidents of plant diseases, human health hazards, particularly with regard to infectious diseases and increased heat-related mortality. These impacts will be particularly intensively felt in the Mediterranean coastal zones.

6. However, the Mediterranean countries' capacity to respond to such threats is hampered by insufficient data and understanding of the issues, absence of regional assessments of the socio-economic costs of climate change and lack of consensus on policy options and possible response measures. It is, therefore, critically important that research work advances our understanding of how climate variability will impact the coastal zone communities, natural resources and marine and coastal biodiversity of the Mediterranean. However, it is equally as important to ensure that scientific information, thus generated, be made accessible to decision makers, and that actions be taken to integrate them within the context of Integrated Coastal Zone Management (ICZM) as well as into current land use and water policies and practices, in order to improve sustainability in view of future climatic scenarios. This project aims to support the participating countries to access climate change/variability assessments, data tools and methods required to develop the most cost-effective measures through the implementation of the ICZM Protocol to protect coastal communities and resources from the threats posed by climate variability and change.

7. ICZM is a long established management approach in Mediterranean coastal regions. Its importance for the regional countries has been strengthened by the entry into force of the ICZM Protocol to the Barcelona Convention (March 2011). The Mediterranean ICZM Protocol is intended to reap development benefits through implementation of a management approach that will facilitate sustainable economic growth; help conserve natural habitats and species; assist in controlling pollution of coastal waters; contribute to the more efficient use of coastal resources; help rehabilitate degraded resources; provide mechanism and tools for rational resource allocation based on appropriate valuation of ecosystem services; and help mitigate and adapt to the impacts of climate variability and change. The ICZM Protocol is the first regional ICZM legal instrument that deals extensively with the issue of climate change, both at the strategic level (by requesting countries to mainstream climate change issues into national ICZM strategies and plans) and local levels (by requesting countries to define, *inter alia*, the coastal setback zone).

8. The ministerial discussions held at the 16th Ordinary Meeting of the Contracting Parties to the Barcelona Convention, held in Marrakesh (November 2009), emphasized in particular the need for the Mediterranean region to collectively build a strong coalition and partnership for action on adaptation to climate change, the need for regional coordination for adaptation to climate change and for sharing of domestic adaptation related experiences and tools including the needs for capacity building. The need for enhanced knowledge and scientific assessment as tools for policy makers to incorporate measures into adaptation plans was also underlined. The "Marrakesh Declaration" adopted by Ministers of Environment and Heads of Delegations during the meeting concluded that adaptation to climate change in the marine coastal zone is a major priority for the Mediterranean region and that it requires regional guidance and coordination.

9. The Project will support the implementation of the ICZM Protocol through the development of region wide capacity, enabling environment and tools needed to address climate variability and change in the Mediterranean Region. It has two foci: one is to raise awareness on the issue of climate variability and change in the region, as well as by identifying the vulnerable areas, while the other is to promote the use of ICZM as an effective tool to deal with the impacts of climate variability and change in coastal zones by mainstreaming them into the ICZM process. The essence of the project is, thus, close integration between the two

aspects. This project is also complementary to the overall GEF funded UNEP/MAP Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem (the MedPartnership) project.

10. The Project's timeline, and major events since 2009 are as follows:

- PIF prepared and cleared by GEF CEO (September 2009)
- PPG approved (February 2010)
- International Consultant hired to prepare Project Document (September 2010)
- Regional and National Reports finalized (February 2011)
- First draft of the Project Document presented at the MedPartnership's Steering Committee meeting in Damascus (March 2011)
- Second draft of the Project Document prepared (June 2011)
- Project Document finalized and submitted to GEF CEO for endorsement (October 2011)
- Project Document endorsed by GEF CEO (January 2012)
- Launching of the Inception Phase and adoption of the Roadmap (May 2012)
- Contracts with executing partners (Oct-Dec 2012)
- Plan Bleu Activities commenced; 7 National workshops (March 2013)
- PAP/RAC Activities commenced; demo project in Croatia (March 2013)
- Coordinating Group meeting in Paris (April 2013)
- Cooperation with UNEP/GRID-Geneva (June 2013)
- Elaboration of Tunisian demo project site (October 2013)
- GWP-Med Activities commenced; MPs meeting (November 2013)

1.4 Launching of the Climate Variability Project

11. The Inception Phase, and the preparation of this Inception Report, started relatively shortly after the Project was endorsed by GEF CEO in January 2012. In preparation for the 3rd Steering Committee of the MedPartnership held in Istanbul, Turkey on the 15-17 May 2012, a "Roadmap" for the Inception Phase of the Climate Variability Project was prepared as a pre-curser to the Inception Report (see UNEP(DEPI)/MED WG.368/7). The Roadmap preparation process is an interim step between the period when the endorsement of the Project Document was obtained and the moment the Inception Report will be finalized and disseminated.

12. The objective of the third day of the meeting regarding the Climate Variability project was to review the roadmap for the Climate Variability and Change project and provide guidance for the Inception Phase and further implementation. During the meeting, several objectives were achieved. First, the countries were presented the three basic issues on which the Project is focused: climate variability, climate change and ICZM. Second, countries were given the opportunity to present, at length, the "state-of-the-art" of their efforts to adapt to climate variability and change, which they have fully exploited and provided the PMU with a wealth of information. Thirdly, the Project Executing Partners described in detail how the activities will be

implemented. And finally, the countries approved the steps to be taken during the first year of the implementation of the Project. A request was made for the project to widen its scope both in terms of thematic focus (in particular to include biodiversity issues and coordinate with SPA/RAC) and scope (to include not only the coastal zone but key watersheds). Also stressed was the need to thoroughly assess synergies with other relevant projects currently being implemented in the region, such as PEGASO, CLIM-RUN, CLIM-ADAPT, as well as UfM and EU led initiatives and programmes.

13. Further information on the activities undertaken as part of the Inception Phase is given in Chapter 5.

2 Climate Variability and Change and ICZM: "the-state-of-the-art"

14. The main goal of the Project is to assist countries to mainstream the issue of climate variability and change into the ICZM by using instruments provided by the recently adopted Mediterranean ICZM Protocol to the Barcelona Convention. Having said that, it is important to keep in mind that while implementing the Project we should be constantly focused on two equally important aspects: definition of the climate variability in the Mediterranean context and its relation to climate change, and relevance of ICZM as an instrument for mainstreaming the former into national and local development thinking and planning. Shifting significantly the balance between these two aspects in one or the other direction, would result in missing the main goal of the Project.

15. It has been felt that there is a need to clearly define what exactly is "climate variability", and in particular what it is in the context of this project. We have in mind here the policy dimension of the climate variability, i.e. how it manifests itself, more specifically how it affects coastal areas of the Mediterranean region, and what is needed to adapt to changes it brings. Equally so, it is important to state what is the nature of relationship between climate variability and climate change. It has to be said that the literature on the subject is very scant. Very few publications focus directly on the issue of climate variability, less so on climate variability in coastal areas, and even less so in providing answers how to adapt to it.

16. There is also the need to deepen the linkage between climate variability and change and ICZM and, more specifically, coastal spatial planning. Again, there are only a few references that could be consulted at this stage. During the preparation phase of the project, a series of reports were produced as a basis for the project documents, namely:

- Regional Assessment of regional experience on climate variability and change monitoring and predictions in the Mediterranean area[1]
- Regional experience on assessing impacts of climate variability and change in the Mediterranean area[2]

[1] Euro-Mediterranean Center for Climate Change / Centro Euro-Mediterraneo per i Cambiamenti Climatici (CMCC), Bologna, Italy, 2011

- National Reports on the Current status of Climate Variability and Change in Morocco, Algeria, Egypt, Syria, Palestinian Authority, Albania, Montenegro, Croatia and Bosnia and Herzegovina (with the Libyan and Tunisian reports still pending).

17. The Project will, thus, be an effort to provide answers to the above questions, as well as give practical advice to coastal managers and decision makers to deal with the subject in the field. A further step in this direction was discussion during the 3rd Steering Committee meeting of the MedPartnership (May 2012 in Istanbul), using as the basis for discussion the above papers.

2.1 Climate variability and climate change: The issue of the definitions

18. Climate variability and change over the past century have already had significant and measurable effects on ecosystems, societies, economies, and health. It is a widely acknowledged fact that climate change contributes to sea-level rise and to the frequency and intensity of floods, droughts and other extreme weather events, wildfires and crop failures, and outbreaks of disease and insect damage. Even though average precipitation is increasing as the climate warms, changes in the amount, timing, and distribution of rain, snow, and runoff are challenging the ability to manage water supply. Projected changes in temperature and precipitation patterns in response to increasing greenhouse gas concentrations throughout the 21st century are expected to intensify the effects on species, ecosystems, societies, economies and health in many areas of the world. At this point, it would be important to clarify some semantic/technical issues related to the definitions of "climate variability" and "climate change". Although these notions have not the same meaning, it could be often observed that not enough distinction is being made between their definitions. In addition, it could be observed that there are many references to climate change in literature, but much less so to climate variability. Also, clear definition of "climate variability" is rarely found. In order to shed some more light on the issue, several definitions of both notions are presented below.

19. Climate Change is 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, which persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forces, or to persistent anthropogenic changes in the composition of the atmosphere or in land use[3]. This definition differs from that in the United Nations Framework Convention on Climate Change (UNFCCC), where climate change is defined as: "…a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods."[4] The UNFCCC thus makes a distinction between

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[2] Groupe de Recherche «Environnements Côtiers et Changements Climatiques» Université Mohamed V, Rabat, 2011

[3] Parry M.L., O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson (eds), 2007. *Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.* Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA; USAID, 2007. *Adapting to Climate Variability and Change: A Guidance Manual for Development Planning*. U. S. Agency for International Development, Washington, DC.

[4] United Nations Framework Convention on Climate Change, Article 2: Definitions, 1992.

climate change attributable to human activities altering the atmospheric composition, and climate variability attributable to natural causes. A changing climate leads to changes in the frequency, intensity, spatial extent, duration, and timing of extreme weather and climate events, and can result in unprecedented extreme weather and climate events. Changes in extremes can be linked to changes in the mean, variance, or shape of probability distributions, or all of these. Some climate extremes (e.g., droughts) may be the result of an accumulation of weather or climate events that are not extreme when considered independently. Many extreme weather and climate events continue to be the result of natural climate variability. Natural variability will be an important factor in shaping future extremes in addition to the effect of anthropogenic changes in climate.[5]

20. Results of recent investigations suggest that climate change tends to exacerbate geo-disasters. Coastal zones are particularly susceptible to this type of event, as climate factors might cause disasters that are more severe if smaller disasters such as flooding by high tides, sea level rise, change in the frequency and intensity of rains, invasion of seawater into riverine areas because of sea level rise, etc. were to occur concurrently. To conclude, evidence shows that climate and weather variations and variability show that geo-hazards tend to increase over time.[6]

21. The distinction between "climate variability" and "climate change" relates to differences in time-scale. On the one hand, "climate variability" is conceptualized as variations in the climate system over short time scales such as months, years or decades and, on the other hand, "climate change" is conceptualized as longer term trends in mean climate variables of periods of decades or longer[7] (see Figure 1). Many weather and climate extremes are the result of natural climate variability (including phenomena such as El Niño and La Niña), and natural decadal or multi-decadal variations in the climate provide the backdrop for anthropogenic climate changes.[8] Even if there were no anthropogenic changes in climate, a wide variety of natural weather and climate extremes would still occur.

[5] IPCC, 2012. *Summary for Policymakers.* In: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* [Field, C.B., V. Barros, T.F. Stocker, D. Qin, D.J. Dokken, K.L. Ebi, M.D. Mastrandrea, K.J. Mach, G.-K. Plattner, S.K. Allen, M. Tignor, and P.M. Midgley (eds.)]. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change. Cambridge University Press, Cambridge, UK, and New York, NY, USA.

[6] Yasuhara, K. et al., 2012. "Effects of climate change on geo-disasters in coastal zones and their adaptation". *Geotextiles and Geomembranes*. Vol.30, pp.24-34. Elsevier.

[7] IPCC, 2001. *Climate Change 2001: The Scientific Basis. Contribution of Working Group I to the Third Assessment Report of the Intergovernmental Panel on Climate Change* [Houghton, J.T.,Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden, X. Dai, K. Maskell, and C.A. Johnson (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA,

[8] National Research Council, 2012. *Climate Change: Evidence, Impacts, and Choices.* National Research Council, Washington, DC.

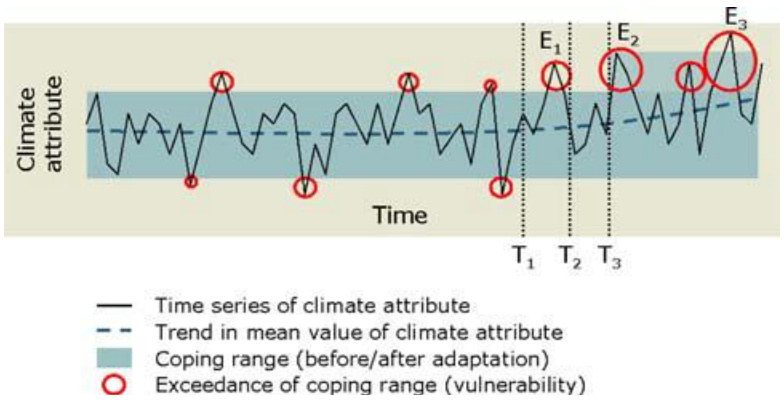

Figure 1: How climate variability evolves into climate change

22. Climate variability is defined as variations in the mean state of climate on all temporal and spatial scales beyond that of individual weather events. Examples of climate variability include extended droughts, floods, and conditions that result from periodic El Niño and La Niña events.[9] The UNEP report[10] prepared for the recently held Rio+20 Conference in Brazil, while accepting the same definition as above, also states that "variability may be due to natural internal processes in the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability)."

23. Climate variability can cause abrupt disruptions, such as floods, droughts, or tropical storms. These disruptions can take a major toll on a country's economy if a significant part of economic activity is sensitive to the weather and climate as is, for example, the case with coastal economies. The recent IPCC report[11] states that extremes, exposure, and vulnerability, as the clearest phenomena associated with climate variability are influenced by a wide range of factors, including anthropogenic climate change, natural climate variability, and socioeconomic development. Similarly, there are predictions that due to accelerated anthropogenic activities, climate variability will continue to increase, characterized by heightened frequency and intensity of extreme weather conditions. Therefore, future changes in exposure, vulnerability, and climate extremes resulting from natural climate variability, anthropogenic climate change, and socioeconomic development can alter the impacts of climate extremes on natural and human systems and the potential for disasters. It has also been observed that climate variability becomes inter decadal, namely climate variability becomes the phenomenon on the time scale of a few decades, i.e., the time scale of an individual human's life cycle. The combination of global warming, superimposed on decadal climate variability and inter annual fluctuations (ENSO, NAO) are expected to lead to a century of increasing climate variability and change that will be unprecedented in the history of human settlement.

24. Having the above in mind, adaptation to climate variability is necessary both to reduce current vulnerability to climatic hazards and stresses as well as to prepare for future climate change. Although development cannot necessarily be made climate-proof, development strategies should acknowledge predicted climate change in order to minimize its impact. This is

[9] USAID, 2007. Ibid.
[10] UNEP, 2012. *GEO 5: Environment for the future we want*. United Nations Environment Programme, Nairobi, Kenya.
[11] IPCC, 2012. Ibid.

particularly relevant for coastal areas as they count among the most sensitive ecosystems on earth. Current management practices, which typically focus on the shorter-term actions targeting impacts of climate variability, should also reflect this need to change the focus to a longer term.

2.2 Climate variability and change and the Mediterranean Integrated Coastal Zone Management Protocol.

25. UNEP/MAP has been working on the issue of climate change impacts to the marine and coastal zone as far back as in the 1990's, including 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", edited by L. Jeftic, J.D. Milliman and G. Sestini. A comparative analysis of the main findings, conclusions and recommendations of the site-specific case studies were presented in 1996 in the 2nd Volume of the aforementioned edition, edited by L. Jeftic, S. Keckes and JC Pernetta. One of the major observations of these studies was the critical role that coastal zone planning has to play in climate adaptation policies.

26. With few exceptions, the potential consequences of climate variability and change are not yet fully being considered in coastal management. Assessing what will be potential effects of climate change on coastal and marine resources over the next few decades is extremely difficult. The task is made even more difficult if we consider that coastal areas count among the most environmentally sensitive and dynamic areas in the entire world. If we add to that the impact of human induced disturbances, many coastal ecosystems will face reduced capacity to cope with effects of climate change. The Table 1 presents some of the general impacts of climate change on coastal zone. It is, by no means, extensive and a few more effects could be added, such as effects on biodiversity and fisheries. However, the purpose of this table is only to indicate how wide the range of climate change effects could be.[12] Table 2 presents some concrete impacts climate change could have in coastal areas and one could notice that some of these impacts could be caused by climate variability as well. Among the very practical issues ICZM will have to deal with are the sea-level rise impacts such as: erosion, inundation, an increased risk of flooding and impeded drainage, salinity intrusion into freshwater supplies, higher water tables reducing safety of foundations, land loss, etc.[13] Table 3 is more location specific, and it reflects the impacts climate change might have in the Mediterranean region, not only physical impacts but socio economic as well.[14]

[12] Priority Actions Programme Regional Activity Centre (PAP/RAC), 2010. *Position Paper: Climate Change in Coastal Zones of the Mediterranean*.

[13] Nicholls, R.J. and F.M.J. Hoozemans, 1996. "The Mediterranean: vulnerability to coastal implications of climate change". *Ocean & Coastal Management*. Vol. 31, Nos. 2-3, pp.105-132. Elsevier.

[14] Travers, A., Elrick C. and Kay R., 2010. Ibid.

Climate Change Impacts	Effects on the Coastal Environment
Higher sea levels **Higher sea temperatures** **Changes in precipitation patterns and coastal runoff** **Changed oceanic conditions** **Changes in storm tracks, frequencies and intensities**	Bio-geophysical effects • Displacement of coastal lowlands and wetlands • Increased coastal erosion • Increased flooding • Salinisation of surface and groundwaters Socio-economic impacts associated with climate change include: • Loss of property and land • Increased flood risk/loss of life • Damage to coastal protection works and other infrastructure • Loss of renewable and subsistence resources • Loss of tourism, recreation, and coastal habitats • Impacts on agriculture and aquaculture through decline in soil and water quality Secondary impacts of accelerated sea level rise: • Impact on livelihoods and human health • Decline in health/living standards as a result of decline in drinking water quality • Threat to housing quality Impacts on infrastructure and economic activity: • Diversion of resources to adaptation responses to sea level rise impacts • Increasing protection costs • Increasing insurance premiums • Political and institutional instability, and social unrest • Threats to particular cultures and ways of life

Table 1: Impacts of climate change in the coastal zone (PAP/RAC 2010)

Factor	*Direction of change*	*Comments*	*Potential impacts*
Sea level	positive, accelerating	exacerbated by subsidence	numerous (see text)
Sea-water temperature	positive	—	increased algal blooms
Precipitation intensity	positive	—	increased flooding
Wave height	?	—	increased/decreased cross-shore erosion
Wave direction	?	—	increased/decreased longshore transport
Storm frequency	?	—	increased/decreased storm surge occurrence
Riverine sediment supply	?	also sensitive to catchment management	increased/decreased sediment supply to the coast

Table 2: Some climate change factors relevant for ICZM (Nicholls and Hoozemans, 1996)

Attribute	Details
Physical	Shoreline erosion, flooding, unstable shorelines (rock and sandstone cliffs).
Ecosystems and biodiversity	Observed temperature rises and changes in precipitation patterns already affect various aspects of the Mediterranean's natural systems. Projected climate change is expected to lead to considerable losses of species and habitats throughout the region.
Livelihoods	*Social:* Changes in frequency and intensity of extreme weather and climate events could pose a serious threat to human health. These threats may either be direct, such as heat waves and flooding, or indirect, for example, by the spread of tick-borne diseases. Particularly vulnerable sections of the population are elderly people with limited access to health care services. There are already major Water Source Shortages in some areas, and these will increase due to climate change (rainfall and runoff decreases, SLR, saline intrusion of groundwater) as well as population increases. A growing share of water demand is being met through the over-exploitation of groundwater, prompting seawater seepage (which, among other problems, leads to soil salination problems when this water is used for irrigation). This problem will be exacerbated with SLR. *Economic:* Fisheries - The structure and dynamics of fish stocks on the Mediterranean continental shelf are likely to react both to the effects of human activity (fishing) and to climate change (warming, sea level rise, decreased rainwater run-off, etc.), with consequences for the fisheries which rely on them. Forestry – increased risk of forest fires and parasites (forest production, and impacts of fires on people and economy and environment). Tourism - If heat-waves and summer temperatures increase, the Mediterranean regions could become less attractive to the benefit of more northern destinations. Extreme natural events or a significant rise in the cost of transport relating to global warming prevention programmes could also harm tourist activity as could potential clashes with other users over scarce water resources. Further, biodiversity and quality of natural environment are strong attractors of tourism, and these may be negatively effected by climate change. Economy-wise the most vulnerable sectors are beach tourism and fisheries.

Table 3: Climate change impacts in the Mediterranean (PAP/RAC 2010)

27. Assessing potential consequences of climate change on coastal areas and devising adequate adaptation strategy is a rapidly growing but still a very young scientific and managerial discipline. The current coastal management system in many countries of the Mediterranean is not particularly adaptable, even to current climate variability and change risks, and there is little inclination to restrict development in vulnerable locations. Adaptation strategies would involve conserving remaining natural coastal areas, placing less property at risk in low lying or flood- or slide-prone areas. Having all the above in mind, it is becoming especially urgent to begin adaptation now in order to have an adequate response strategy in the years or decades to come.[15]

[15] Boesch, D.F., J.C. Field, and D. Scavia, (Eds.), 2000. *The Potential Consequences of Climate Variability and Change on Coastal Areas and Marine Resources.* Report of the Coastal Areas and Marine Resources Sector Team, U.S. National Assessment of the Potential Consequences of Climate Variability and Change, U.S. Global Change Research Program. NOAA Coastal Ocean Program Decision Analysis Series No. # 21. NOAA Coastal Ocean Program, Silver Spring, MD.

28. When exploring the link between ICZM and climate variability and change, we should not lose sight of the fact that climate change mainly comes into play by accentuating threats and problems – sometimes opportunities – that already exist. Currently, problems in Mediterranean coastal zones do not stem from the impact of climate change but from the impact of unsustainable development models so far adopted by the societies concerned. The problem of coastal erosion is a good example of this. It is a major challenge for many Mediterranean coastal zones but it is mainly related to coastal installations: sea defense facilities (which prevent shore drift and accelerate erosion down shore, walls and rock armor at the top of the beach, destruction of dunes by treading or construction, etc.) and river installations (it is estimated that sediment input from rivers decreased by up to 90% in the second half of the 20th century because of the construction of dams and the massive extraction of granular material). However, as it is now clear that coastal erosion is one of the main negative impacts resulting from climate change, it should start being considered in an appropriate manner in all adaptation plans and strategies.

29. The ICZM Protocol is a key tool to facilitate mainstreaming coastal climate variability and change adaptation in the Mediterranean. The ICZM Protocol is a legal international instrument unique in the context of international environmental law. It is a key tool for sustainable coastal development, as it provides an effective way of ensuring that human activities are undertaken with a concern for balancing economic, social and environmental goals and priorities in a long term perspective. It adds provisions on the strategic environmental assessment, environmental impact analysis, the protection and sustainable use of coastal areas, particular coastal ecosystems, coastal landscapes and islands, economic activities and cultural heritage. Particularly, it is important to point out that the Protocol is the first regional ICZM legal instrument that deals extensively with the issue of climate change, both at the strategic level (for example, by requesting countries to mainstream climate change issues into national ICZM strategies and plans) and local levels (for example, by requesting countries to define, *inter alia,* the 100 m coastal setback zone). Table 4 gives an overview of Protocol's articles that directly or indirectly deal with the issues of climate variability and change.[16] The total of 22 Protocol's articles are related to climate variability and change and are proof enough that this issue has been adequately mainstreamed into this major Mediterranean ICZM legal document, and that the focus of Project is rightly twofold:

- to analyze the issue of climate variability, and consequently climate change, in the Mediterranean region, particularly in its Southern and Eastern countries by identifying the critical areas; and
- to promote the ICZM as the most adequate tool to mainstream climate variability and change issues and to show how it could be put into practice in some of the critical areas identified.

[16] Travers, A., Elrick C. and Kay R., 2010. Ibid.

Part	Climate change adaptation considerations
Requirements	Article 8: Climate change is a cross sectoral issue that will effect marine and land management. Consequently, climate change should be mainstreamed into coastal strategies, plans and programmes across all levels of operation. Criteria to monitor the potential impacts of climate change, and the effectiveness of adaptation strategies to mitigate the potential impacts of climate change, should be incorporated within national legal instruments. While general criteria can be outlined, all criteria must be place-based. Climate change criteria are under development internationally. This is a new area of research and therefore consultation and collaboration with international partners will be vital to ensuring robust criteria area developed. Article 9: Climate change will impact economic activities in the region. The potential impacts of climate change on economic activities in the coastal zone must be clearly understood to support effective management of such activities. For example, approaches to manage agriculture or tourism activities in the coastal zone may differ under an altered climate regime. Articles 10 & 11 & 12 & 13: Measures to protect coastal ecosystems, landscapes and socio-economic elements (i.e. cultural heritage) should be based on an understanding of how they may change under projected climate changes. Such an approach will ensure that measures taken to protect the characteristics of specific coastal ecosystems, landscapes and socio-economic elements are sustainable despite a changing change. Islands are particularly susceptible to the potential impacts of climate change, namely rise in mean sea level. The impacts of climate change on islands must be considered. Articles 14 & 15: Awareness raising activities, training programmes and research into ICZM must incorporate climate change. Climate change adaptation is a core component of an integrated approach to coastal management, and the potential impacts of climate change must be understood to ensure ICZM can be achieved. For example, training in vulnerability and adaptation assessments and research into the potential impacts of climate change on the social, economic and environment elements of the coastal zone, are priority areas of information collection.
Instruments	Article 16: Climate change should be monitored and observed through existing, or new, mechanisms. The outputs should be maintained within national inventories that capture information mean sea level, storm events, etc, following an agreed format and process for data collection. In addition, experience in climate change adaptation should be shared through participation in coastal networks (such as the Mediterranean coastal network and the Adaptation Learning Mechanism). Article 17: Climate change adaptation is incorporated within the Mediterranean Strategy for Sustainable Development (MSSD). The MSSD should be taken into account to define a common regional framework for ICZM in which climate change is mainstreamed. Subsequently, climate change should also be mainstreamed into ICZM implementation tools, such as regional action plans, national strategies and other operational instruments. Article 18: As per Article 17, climate change should be mainstreamed into national coastal strategies and coastal implementation plans and programmes. The national coastal strategy should contain summary of existing situation (including a climate change vulnerability assessment), rationale for management priorities, and schedule of measures to be taken and implementation details (cost, institutional structures). Indicators to evaluate effectiveness of strategies (adaptation strategies and broader environmental strategies), plans, and programmes and progress of implementation of the Protocol are required. Refer to Article 8 for information on climate change criteria that may be used to as indicators for inclusion in strategies, plans and programmes. Article 19: Environmental impact assessments consider the sensitivity of the environment to projected impacts of climate change and the inter-relationships between marine and terrestrial parts of the coastal zone and the cumulative impacts on the coastal zone in respect to coastal carrying capacities. Article 20: Adopt land policy instruments and measures (i.e. planning, acquisition, cession, donation, or transfer of land) to ensure sustainable management of public and private land of the coastal zones under a changing climate. For example, development set backs should be established, which incorporate projections for rise in mean sea level.

Part	Climate change adaptation considerations
	Article 21: Adopt financial, economic or fiscal instruments to support implementation of national coastal strategies, plans and programmes. Financial instruments to support climate change adaptation may include UNFCCC sources, GEF sources + other sources of funding. In addition, opportunities to establish a climate change trust fund may be investigated.
Risks	Article 22: Undertake vulnerability and hazard assessments to take preventive, mitigation and adaptive measures to address the effects of natural disasters, in particular climate change. Article 23: To prevent or mitigate the negative impacts of coastal erosion adopt the necessary measures to maintain or restore the natural capacity of the coast to adapt to change, including rise in sea levels. The effect of climate change on local and regional sediment budgets should be assessed. Such information will support the development of coastal or marine structures that take into account the potential negative effects on coastal erosion and the direct and indirect costs that may result. In addition, scientific data to improve knowledge on state, development and impacts of coastal erosion under changing climate should be shared. Article 24: Climate change is expected to increase the intensity (and potentially the frequency) of extreme events. Consequently, it is important to ensure that action is taken to build response capacity. International co-operation to co-ordinate the use of equipment for detection, warning, and communication is important in this regard.
International Cooperation	Article 25: Training in the field of ICZM (which incorporates climate change - as per Article 15) should be undertaken to strengthen capacity, develop scientific and technical research, promote centres specialised in ICZM, and promote training programmes for local professionals. Articles 26 & 27: Co-operate for the provision of scientific and technical assistance in climate change adaptation, including access to adaptation technologies and their transfer. Co-operate in the exchange of information on best practice climate change adaptation; in particular: establish and mainstream vulnerability and adaptations assessments; define adaptation strategies for application in the coastal zone; identify indicators to monitor the effectiveness adaptation action; and carry out activities of common interest, such as demonstration projects. Articles 28 & 29: Ensure climate change is a core component in all co-ordinated national coastal strategies, plans and programmes related to contiguous coastal zones. Co-operate through notification, exchange of information and consultation in assessing the environmental impacts (which incorporates an understanding of climate change) of plans, programmes and projects, prior to authorisation. To this end, co-operate in the formulation and adoption of guidelines to establish procedures to support notification, exchange of information and consultation at all stages of plan, programme and project formulation.
Institutional provisions	Following the descriptions above, climate change adaptation is an integral component to ICZM. It is not an additional activity or action to be undertaken. Therefore, the institutional provisions remain as per the Protocol and do not need to be individually specified here.

Table 4: Alignment of climate variability and change adaptation to the ICZM Protocol (PAP/RAC, 2010)

30. The preparation of national ICZM strategies and plans (Article 18) has been defined above as one of the strategic aspects of the Protocol. Consequently, ICZM strategies and plans may be considered as crucial tools for the assessment of impacts of climate variability and change, and for proposing solutions to adapt to them. One of the partners in the project, PAP/RAC, has developed a simple 5-step ICZM process, which has been driven by the provisions of the Mediterranean ICZM Protocol[17]. The process is rather generic in order to secure its high adaptability, and one of its first activities is to see how the climate variability and change issues could be integrated into every step of the process. PAP/RAC has prepared a document which sets foundation to develop guidelines for integration of climate variability and change aspects into ICZM.[18] The document will be consulted during the implementation of this project. An ICZM Process has been designed by PAP/RAC in order to assist the implementation of the ICZM Protocol. It is structured into 5 key stages which are further structured into Key Tasks for each stage. Figure 2 depicts the basic flowchart of the ICZM process, and it should be considered as a point where to start the integration of climate variability and change into ICZM. This will be done in Component 3 of the Project and, then, tested in one of the two coastal areas in which the DIVA and Climagine will be applied. To conclude, one of the high points of the entire project will be to prove that ICZM Protocol is an effective tool to mainstream climate variability and change in ICZM and to assist countries in developing their adaptation strategies.

[17] Priority Actions Programme Regional Activity Centre (PAP/RAC), 2012. *The ICZM Process. A roadmap towards Coastal Sustainability*

[18] Priority Actions Programme Regional Activity Centre (PAP/RAC), 2012. *Integrating climate change into the ICZM Planning process*..

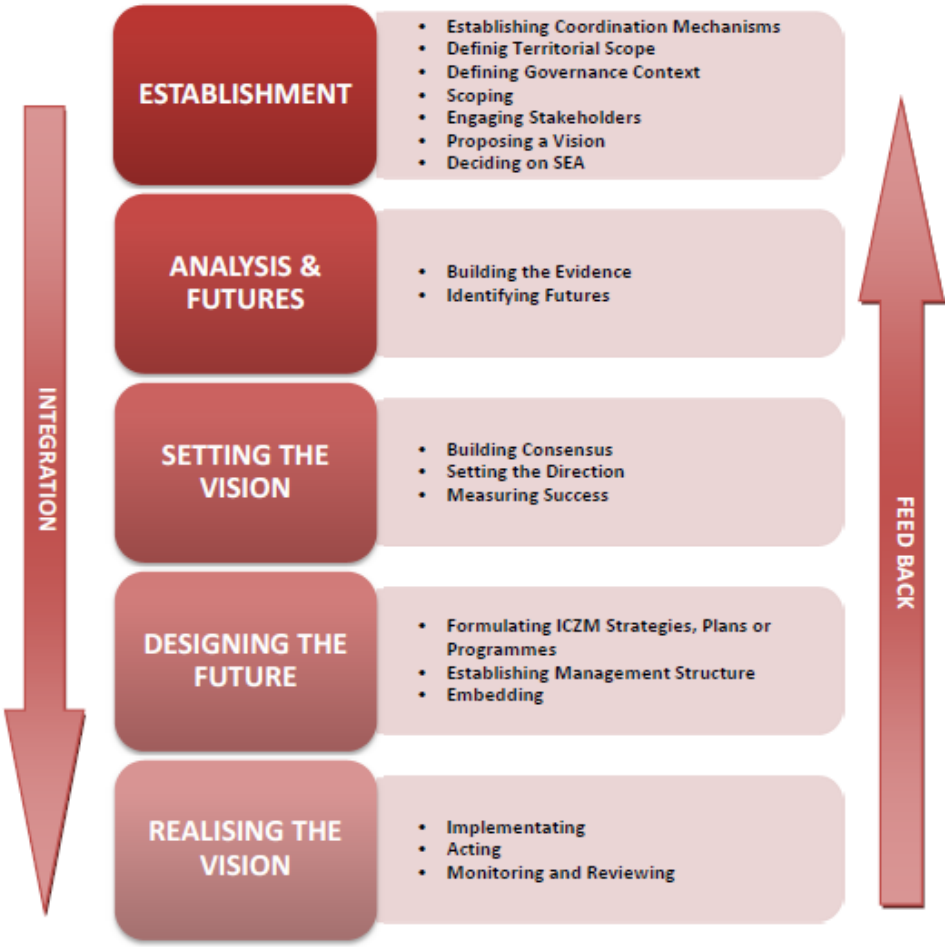

Figure 2: The 5-step ICZM Process (PAP/RAC, 2012)

3 Mediterranean Institutional and Policy Framework on Climate Change and ICZM

3.1 National Communications and TNAs

31. The project is based on the analysis conducted in the preparation phase. Additional analysis on the national communications and adaptation plans was conducted as part of the Inception Phase (See Information document #7). The basic background document to be used for that exercise will be the national reports prepared during the project's preparation phase as well as the national communications on implementation of the UN Framework Convention on

Climate Change (UNFCCC) that Parties must submit to the Conference of the Parties (COP). The required contents of national communications and the timetable for their submission are different for Annex I and non-Annex I Parties. All countries participating in the Project are non-Annex I Parties except Croatia. Palestine Authority is not a party at all. The core elements of the national communications for both Annex I and non-Annex I Parties are information on emissions and removals of greenhouse gases (GHGs) and details of the activities a Party has undertaken to implement the Convention. National communications usually contain information on national circumstances, vulnerability assessment, financial resources and transfer of technology, and education, training and public awareness. The Annex I Parties' communications additionally contain information on policies and measures. Of particular importance for the Project are sections of the report that deal with coastal areas and coastal ecosystems as well as sectors that are well developed in coastal areas such as tourism, water resources, agriculture, infrastructure and similar. In the above mentioned analysis special reference will be given to these aspects of national communications

32. All participating countries, except Libya and the Palestine Authority, have been submitting their national communications, albeit at a different pace (see Table 5). Some have well progressed such as Croatia, which has already submitted its fifth national communication in 2010, while some countries are still in the initial phase, such as Bosnia and Herzegovina, Montenegro and Tunisia, which have so far submitted the initial or the first communication only. However, while Bosnia and Herzegovina and Montenegro submitted their communications relatively recently, in 2009 and 2010 respectively, Tunisia has submitted its report in 2001. Albania has submitted its second communication in 2009, while Morocco and Egypt have submitted their second communication in 2010.

33. All national communications are analyzed with a view to assessing their climate change scenarios, as well as the impacts climate change will have on coastal areas and coastal ecosystems. In addition, where appropriate, the measures proposed in national communications are analyzed and put against the provisions of the ICZM Protocol to assess if the countries' efforts were already commensurate with the Protocol's provisions on climate change. The outcome of this analysis will be an input into the subsequent stages of the Project, particularly for the Component 3, but also in earlier stages of the Project's implementation, when proposals will be developed on how to utilize Protocol as an instrument for adaptation to climate variability and change.

Country	**National Communication on Climate Change**					**TNA**
	First	**Second**	**Third**	**Fourth**	**Fifth**	
Albania		2009				2005
Algeria		2010				
Bosnia and Herzegovina	Initial 2009					
Croatia					2010	2005
Egypt		2010				2001 (partial)
Libya	-					
Montenegro	Initial					

Country	National Communication on Climate Change					TNA
	First	Second	Third	Fourth	Fifth	
	2010					
Morocco		2010				2012
Syria	2010					
Tunisia	2001					2001
Palestine Authority						

Table 5: List of National Communications on Climate Change and Technology Needs Assessments (http://unfccc.int)

34. Technology Needs Assessments (TNA) is a complementary document prescribed by the UNFCCC, which is an additional source of information to assess the situation in the participating countries with regards to climate change and adaptation to it. TNA as one of the five key elements of a framework to enhance technology transfer. According to the IPCC, "technology transfer" means a set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change amongst different stakeholders such as governments, private sector entities, financial institutions, NGOs and research /education institutions. TNA as a component of the technology transfer process is a means by which assessment of development and climate response needs and opportunities are brought together and integrated. TNA is a complex process, as it is not a standalone activity. Rather, it is a continuation of the work most countries have already carried out or identified/recommended in their National Communications and through other activities to enhance technology transfer. TNA entails the identification and evaluation of technical means for achieving specified ends. From a climate change and developmental perspective, TNA would identify technologies, practices and reforms that might be implemented in different sectors of a country to reduce GHG emissions and vulnerability to climate change and to contribute to development goals. With the above in mind, it could be concluded that TNA is more a mitigation than an adaptation type of document. However, its outcome could still be useful in proposing concrete adaptation measures.

Only three countries have submitted their TNA reports. Croatia and Albania have submitted full TNA reports in 2005, while Egypt has prepared in 2001 the report entitled "Building Capacity for Egypt to Respond to UNFCCC Communications Obligations", which counts as a TNA report. It is not at the same level of elaboration as reports by Croatia and Albania, but it has a section on TNA and it counts as one by UNFCCC.

3.2 UNEP/MAP, MCSD and the ICZM Protocol

35. ICZM Protocol entered into force in March 2011. Until today, 9 countries have ratified it, out of which 4 are participating in the Project (Albania, Croatia, Montenegro and Morocco). Three additional participating countries signed the Protocol (Algeria, Syria and Tunisia) but they still have to ratify it. Two countries are in the process of preparation of the national ICZM Strategies (Algeria and Montenegro). It is also known that several countries have prepared, or are in the process of preparation of, a number of studies that deal with the impacts of the

ratification of the Protocol on their national legislation (Croatia and Montenegro, in particular). They seem to be particularly interested about the impacts that the implementation of the Article 8 (establishment of the 100 metres coastal setback) will have on their coastal development.

Article 8.2 of the Protocol on Integrated Coastal Zone Management in the Mediterranean states that the Parties:
"shall establish in coastal zones, as from the highest winter waterline, a zone where construction is not allowed. Taking into account, inter alia, the areas directly and negatively affected by climate change and natural risks, this zone may not be less than 100 meters in width…"

36. The importance of the coastal setback for adaptation to climate variability and change is not yet understood in most of the countries. The developers' pressures on the very narrow coastal strip are still extremely intensive. Therefore, setback is still primarily perceived by most as a restriction to costal development for environmental protection purposes. Thus, in addition to undertaking concrete activities in adapting vulnerable coastal zones of the participating countries to impacts of climate variability and change, the Project will have to significantly contribute to raising the awareness among all stakeholders about the positive impacts of the Protocol and its contribution to the adaptation to climate variability and change. This task is to be performed under Component 3 and it started in the summer of 2012.

37. While the issue of ICZM has been very prominent in the activities of MAP, culminating with the negotiation on, and adoption and entry into force of the Mediterranean ICZM Protocol, the issue of climate change is only gradually coming to the top of the regional decision makers' agenda. However, it is worth mentioning that already in early 1990's, the Mediterranean was among the first regional seas to start analyzing the issue of climate change. A large number of case studies were prepared, and several influential publications were published. To conclude, climate change and variability has now clearly become a priority for the Mediterranean, as flagged in the 4th IPCC Assessment Report, in specific programmes and research projects in the Mediterranean such as the Mediterranean Climate Variability and Predictability (MedCLIVAR) project, the Climate Change and Impact Research programme (CIRCE), in reports by the European Environment Agency (EAA)[19], and in reports by the Plan Bleu[20] amongst several others. The Blue Plan's "State of the Environment and Development in the Mediterranean" report, published in 2009, concludes that considerable efforts are still required to anticipate the impacts of climate change. More recently, in 2013 UNEP/MAP published its "State of the

[19] EAA, 2008. *Impacts of Europe's changing climate — 2008 indicator-based assessment*. EEA, Copenhagen, EAA, 2013. *Adaptation in Europe - Addressing risks and opportunities from climate change in the context of socio-economic developments*. EEA, Copenhagen.

[20] For example, "State of the Environment and Development in the Mediterranean" (2009), "Mediterranean agriculture: toward adaptation to climate change", and the Report of the Regional seminar on Climate change in the Mediterranean, Marseille, 22-23 October 2008

Mediterranean Marine and Coastal Environment" report[21] which stressed the critical importance of climate change for the Mediterranean's coastal zones.

38. The main legal framework for the Project is the Barcelona Convention and its protocols, and the main institutional framework for its implementation is the Mediterranean Action Plan (MAP). In recent years, MAP has set itself on a steady course towards being more active in assessing the impacts of and providing answers to the problems caused by climate change. The Almeria Declaration (2008) and Marrakesh Declaration (2009), adopted by Contracting Parties at their ordinary ministerial meetings, were landmarks. The Paris Declaration, adopted in early 2012 at the 17th COP, only confirmed the already established course. The latter was not explicit in providing new initiatives on climate change, but strongly reaffirmed the importance of two protocols, ones on ICZM and on Specially Protected Areas, where the issue of climate change acts very prominently.

39. In the meantime, during the last meeting of Mediterranean Commission on Sustainable Development (MCSD), held in Montenegro in May 2011, the members of the MCSD were presented the draft of the Regional Framework for Adaptation to Climate Change. While it is still in its early stages, and a number of steps will have to be undertaken before it will be adopted, including its financing, the Framework is the first serious step towards implementing the Almeria and Marrakech Declarations. One of the suggested revisions of the project is to provide support for the finalization of the Regional Framework for Adaptation to Climate Change for adoption at the meeting of the Contracting Parties to the Barcelona Convention in 2015.

40. The 2012-2013 Programme of Work (PoW) of MAP, adopted at the COP in February 2012 in Paris, is important reference point as this programme period largely coincides with the period when the bulk of Project's activities will be implemented. PoW mentions the issue of climate change as orientation guidance for design and implementation of its activities, and not as one of its main directions of work. However, having in mind the prominence that the issue of climate variability and change has in the PoW, the difference in meaning between guidance and direction should be considered as semantic only. The Project is well integrated in the work of MAP components that participate in this project (PLAN BLEU and PAP). One of the themes of the MAP's PoW is the Theme VI: Climate change. The PoW envisages activities on analysis of climate change impacts (on water resources, coastal zone development indicators to assess climate change impacts, POPs, marine habitats and endangered species, biodiversity, and water re-use). All assessments undertaken within the PoW will contribute to the project, especially components 1 and 2. MEDPOL, CP/RAC and SPA/RAC as members of the MedPartnership Steering Committee will also have direct contribution in the planning of the Climate Variability project (as one Steering Committee serves both projects). The 2014-15 PoW to be discussed at the MAP Focal Points' meeting in December 2013 will include the finalization of the Regional Framework for Adaptation to Climate Change, supported by the project.

41. ICZM is well embedded in the Barcelona Convention framework, in particular after the adoption and entry into force of the Protocol on ICZM. In the Paris Declaration, adopted at the last Contracting Parties Meeting in 2012, the Mediterranean countries showed their resolve to strengthen the integrated management of Mediterranean coastal zones, as a unique instrument at the service of Mediterranean States, an integrated vision of coastal areas and the basis for

[21] "State of the Mediterranean Marine and Coastal Environment", UNEP - Mediterranean Action Plan (MAP), 2013

their sustainable development. They have also adopted the Action Plan for the Implementation of the ICZM Protocol. As in the Protocol itself, the issue of climate variability and change is well integrated into action plan, in particular with regard to the preparation of ICZM strategies and plans. The issue of ICZM is also well embedded in the MAP's 2012-2013 PoW (as Theme II) and is considered as one of priorities.

42. Having all the above in mind, one can conclude that the current policy and institutional context is favourable for the implementation of the Project. This support has been adequately shown during the Inception Workshop in Istanbul. It is of utmost importance now, at the outset of the Project's implementation, that all the National Focal Points be kept informed of the progress of implementation and that they are actively encouraged to stimulate participation of all national stakeholders. The process should start in the implementation of the Component 1, when consensus on data sharing among countries will be sought, as well as in re-activation of Inter Ministerial Committees (IMC), established in the framework of MedPartnership but planned to be utilized in this project as well. It is known that in some countries IMCs are already established, such as in Croatia, and in November 2012 Montenegro received support for Inter-ministerial coordination through the MedPartnership.

3.3 Other related projects and initiatives

43. There have been and there are many climate change related projects implemented in the Mediterranean, and in European and Northern African regions. In the Baseline Analysis and Gaps section of the Project Document 34 relevant regional and national projects were identified (mid 2011), with only a few of them still running. An overview of recent projects relating to climate variability and change adaptation in the Mediterranean was carried out by the PMU and is updated in Information Document #7. It identifies many projects most of which are still being implemented. It is important to note that most of these projects are scientific projects, and only some of them result in policy recommendations. Finally, very few projects overall are dealing with the issue of ICZM, and none of the projects deals specifically with the issue of integration of climate variability and change and ICZM. In this respect, the Project is unique and is, essentially, creating its own niche. Close coordination with ongoing projects and initiatives is expected to be established and maintained throughout the project's implementation.

44. From the perspective of climate variability and change, there are a few key projects which are closely related to the implementation of the Project. At this moment, these are MedCLIVAR, and the CLIM-RUN projects from the perspective of climate variability and change, and, from the ICZM perspective, the PEGASO project, which will be completed in 2014 and the AMCOW/GWP Water and Climate for Development Programme (WACDEP) in Africa, 2012-2016.

45. MedCLIVAR[22] is a scientific programme financed by ESF, which has a multitude of partners, 7 of which are from the Mediterranean countries but, unfortunately, none from the participating countries in the Project. Its objectives are the following: (1) To reconstruct the past climate variability; (2) To investigate the connections between Mediterranean and global climate variability; (3) To understand the mechanisms responsible for the Mediterranean Sea

[22] http://www.medclivar.eu/

circulation, for sea level trends and variability; (4) To assess of the possible feedbacks of the Mediterranean dynamics on the global climate system; (5) To identify the environmental and climatic effects caused by the strong anthropogenic influence at regional scale to which the Mediterranean region has been exposed since ancient time due to heavy demographic pressure; (6) To understand and predict the response of the Mediterranean climate to the increase of radiatively active gases and aerosols; and (7) To make available scientific information and data on regional climate variability, trends and changes to public opinion, authorities and stakeholders in the Mediterranean countries. The initial phase of MedCLIVAR was completed in 2011, although it will most probably continue in the future (see http://www.medcordex.eu/). The preparation phase of the Project was based upon MedCLIVAR's published findings[23], and ongoing reports and findings of MEDCLIVAR will be used in the implementation of Components 1 and 2.

46. CLIM-RUN[24] is an EU financed project with 16 partners from 11 countries which started in March 2011 and is expected to end in February 2014. One Project partner (Plan Bleu) and institutions from 2 participating countries (Tunisia and Croatia) are involved. Three major objectives of CLIM-RUN are: (1) Design and implementation of a protocol for optimizing the two-way information transfer between climate experts and stakeholders; (2) Advancement of the science underpinning the production of detailed climate information at regional to local scales tailored for stakeholder needs; and (3) Test of the protocol via its application to a number of real world case studies. Having in mind the focus of the project, in particular tourism and energy sectors, as well as the fact that the project is aimed at improving the climate change information delivery, and although it doesn't directly deal with the climate variability, it will still be of high importance for the Project (Components 1 and 3), especially because Plan Bleu is among its major partners.

47. The third project, considered to be important at this stage, is PEGASO[25]. It has 24 partners from 16 countries. It started in February 2010 and is expected to end in January 2014. Two Project partners (PAP/RAC and Plan Bleu) and institutions from 2 participating countries are involved (Morocco and Egypt). The main objective of PEGASO is to build on existing capacities and develop common novel approaches to support integrated policies for the coastal, marine and maritime realms of the Mediterranean and Black Sea Basins in ways that are consistent with and relevant to the implementation of the ICZM Protocol for the Mediterranean. More specifically, its three most important actions are: (1) constructing an ICZM governance platform as a bridge between scientist and end-user communities, going far beyond a conventional bridging; (2) refine and further develop efficient and easy to use tools for making sustainability assessments in the coastal zone (indicators, accounting methods, models and scenarios), which will be tested and validated in a multi-scale approach for integrated regional assessment through a number of relevant pilot sites; and (3) implementation of a Spatial Data Infrastructure (SDI), following the INSPIRE Directive, to organize and standardize spatial data to support information sharing on an interactive visor, to make it available to the ICZM Platform, and to disseminate all results of the project to the end users and interested parties. While there is no specific mention of climate variability and change in the project's description, but there is in the

[23] "Mediterranean Climate Variability". Lionello, P. Malanotte-Rizzoli, P. Boscolo, R..Amsterdam: Elservier, 2006

[24] http://www.climrun.eu/

[25] http://www.pegasoproject.eu/

description of some its working packages, its focus on ICZM makes it an especially valuable project that needs to be fully considered and good linkages established in further implementation of the Project. This will be certainly possible considering that two Project partners are also participating in PEGASO. Having inspected the PEGASO structure, it can be concluded that its outputs could be very useful for the implementation of Component 1, i.e. for the development of the multi-country information sharing platform, in Component 2 when methodology for regional analysis of physical, environmental and socio-economic impacts will be developed and implemented, and in Component 3 for the implementation of the Integrated management plan for one of the vulnerable locations.

48. Finally, Water and Climate for Development Programme (WACDEP)[26] is a 16 million Euro programme, 2012-2016, coordinated by the Global Water Partnership (GWP) and the African Ministerial Council on Water (AMCOW). It aims at supporting the integration of water security and climate change adaptation into development planning processes and the design of financing and investment strategies in Africa. The coastal zone is among its areas of intervention. The North African Component of WACDEP is implemented by GWP-Med, with a current focus in Tunisia at national and local levels and in the North Western Sahara Aquifer; its expansion in more North African countries and the entire Mediterranean countries is on-going. Synergies between the Project and WACDEP will facilitate sharing of experiences, wide dissemination of results and co-financing.

4 Summary of Project Activities and description of changes with justification

49. This chapter of the Inception Report explains in detail the work-plan and revised activities of the Project, including the rationale for the changes. The Revised Results Framework is given in Annex I. The changes in the budget resulting from the revision of activities leads to no changes in the overall sum allocated to each partner and to a small change in the budget allocated to Components 2 and 3.

50. The following diagram (Figure 3) gives a simple overview of the Outputs of the Project and their interconnection. An overview of the Project's Outcomes, Outputs and Activities is presented in Table 6 that follows.

[26] http://www.gwp.org/wacdep

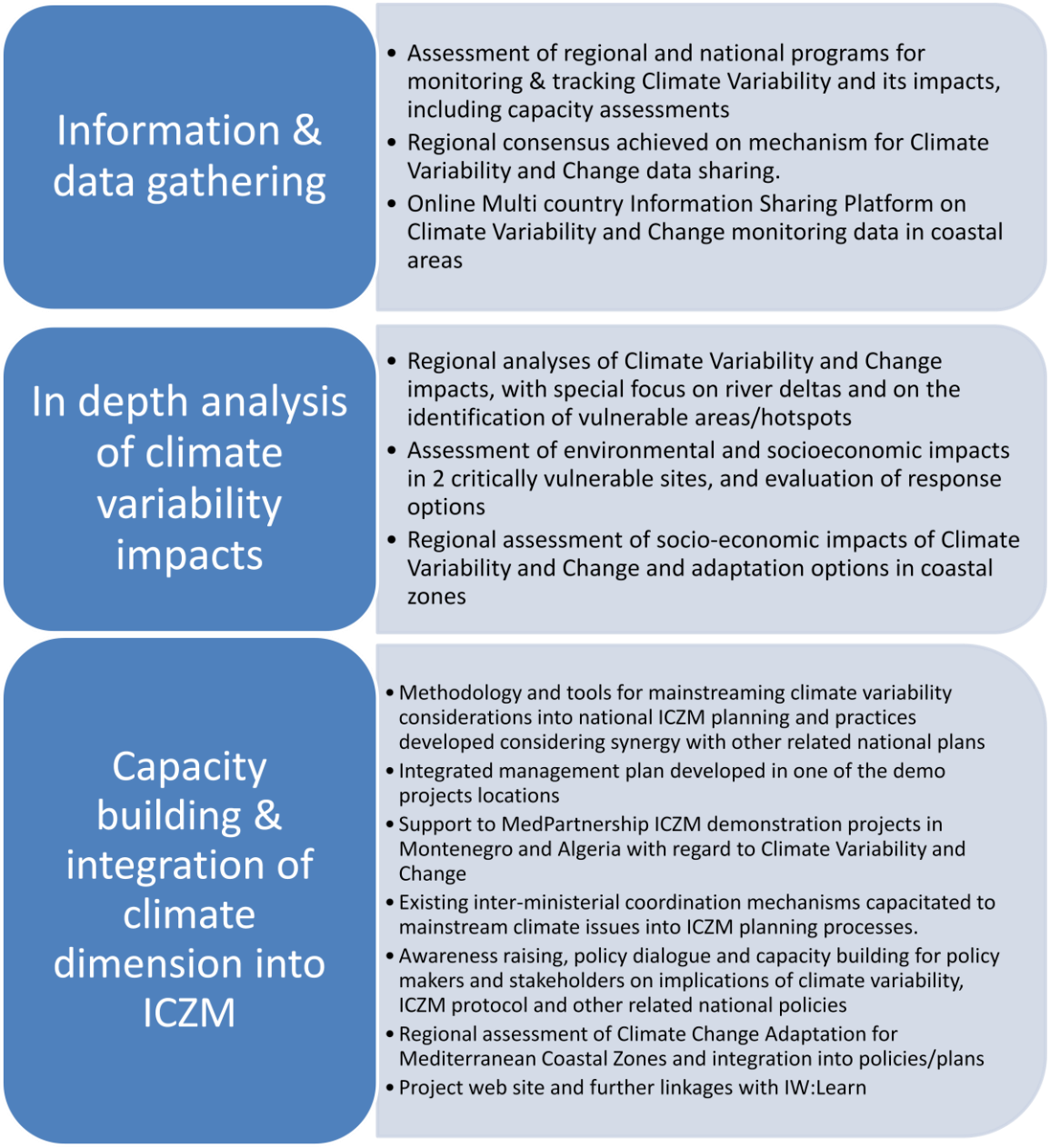

Figure 3: Overview of the project Outputs

Component	Outcome	Output	Activity	Responsible Partner
1. Establishment of a Climate Variability and Change information sharing platform	1.1. Multi-country data platform on climate research supports ICZM planning and management	1.1.1. Assessment of regional and national programs for monitoring and tracking Climate Variability and Change and its impacts, including capacity assessments	1.1.1.1. Identify existing Climate Variability and Change monitoring programs and available data in each participating country, as well as options for data sharing in view of developing a multi-country Information sharing platform	BP/RAC
			1.1.1.2. Regional synthesis of data availability and gaps as well as sharing options.	BP/RAC
		1.1.2: Regional consensus achieved on mechanism for Climate Variability and Change data sharing.	1.1.2.1. Regional Consensus/validation of synthesis report	UNEP/MAP
		1.1.3. Online Multi country Information Sharing Platform on Climate Variability and Change monitoring data in coastal areas developed	1.1.3.1. Identify a set of Climate Variability and Change indicators and preparation of the Terms of Reference for the Online Multi Country Information Sharing Platform on Climate Variability and Change monitoring data	BP/RAC
			1.1.3.2. The Online Multi-country Information Sharing Platform on Climate Variability and Change monitoring data	BP/RAC
			1.1.3.3. : Testing and improving the Information Sharing Platform	BP/RAC
2. Strengthening the knowledge base on regional climate variability and change	2.1. Improved understanding of Climate Variability and Change in the Mediterranean basin, enables countries to assess likely impacts on the coastal environment	2.1.1. Regional analyses of Climate Variability and Change impacts in terms of sea level rise and storm surges, of changes in water characteristics and marine acidification, and with special focus on river deltas and on the identification of vulnerable areas/hotspots	2.1.1.1: Develop a methodology for the regional analysis of physical and socio-economic impacts of Climate Variability and Change	BP/RAC
			2.1.1.2. Collection of data on indicators on physical impacts of Climate Variability and Change at regional level	BP/RAC
			2.1.1.3. Analysis of data on environmental and socio-economic impacts of Climate Variability and Change and identify their consequences for ecosystems and human activities and identify vulnerable activities	BP/RAC

Component	Outcome	Output	Activity	Responsible Partner
		2.1.2. Assessment of environmental and socioeconomic impacts in two critically vulnerable sites, and evaluation of response options	2.1.2.1 Croatia demonstration: Developing, upgrading and combining tools; implementation of the project; dissemination of results.	PAP/RAC
				BP/RAC
			2.1.2.2 Tunisia demonstration: Developing, upgrading and combining tools; implementation of the project; dissemination of results.	PAP/RAC
				BP/RAC
				GWP-Med / GRID
		2.1.3. Regional assessment of socio-economic impacts of Climate Variability and Change and adaptation options in coastal zones for various scenarios	2.1.3.1. In-depth analysis of Impacts of Climate Change in specific hotspots or sectors (to be identified)	BP/RAC
3. Support to ICZM Protocol implementation and capacity building	3.1. Science based methodological approach enabling countries to integrate climate variability and change issues into ICZM policies, plans and programs	3.1.1. Methodology and tools for mainstreaming climate variability considerations into national ICZM planning and practices developed considering synergy with other related national plans (IWRM, NSSD, CCA, etc)	3.1.1.1. Updating Guidelines on National ICZM Strategies and Plans with the climate change proofing tool	PAP/RAC with
				GWP Med
			3.1.1.2. Meeting of the DIVA/ClImagine experts with the IWG of MedPartnership	PAP/RAC with
				GWP Med
			3.1.1.3. Developing on-line module for the Climate Variability and Change to be integrated into MedOpen – virtual ICZM course	PAP/RAC with
				GWP Med
		3.1.2. Integrated management plan developed in one of the locations identified in the	3.1.2.1: Drafting of Integrated Management Plan integrating Climate Variability and Change issues	PAP/RAC with

Component	Outcome	Output	Activity	Responsible Partner
		activity 2.1.2.2.		
		3.1.3. Provide support to MedPartnership ICZM demonstration projects in Montenegro and Algeria with regard to Climate Variability and Change	3.1.3.1. Coastal plan in Reghaia; Trans boundary Integrated management coastal plan in Buna/Bojana; and National ICZM strategies in Montenegro and in Algeria	PAP/RAC
	3.2. Increased knowledge, capacity and awareness improve inter-sectoral coordination in mainstreaming climate variability and change issues into ICZM Protocol implementation process	3.2.1.: Existing inter-ministerial coordination mechanisms capacitated to mainstream climate variability and change issues into ICZM planning processes.	3.2.1.1. Facilitating inter-ministerial coordination for incorporating Climate Variability and Change issues into ICZM	UNEP MAP
		3.2.2. Awareness raising, policy dialogue and capacity building for Policy makers and stakeholders in participating countries on implications of climate variability, ICZM protocol and other related national policies	3.2.2.1. Assessment of the banking and insurance sector	PAP/RAC with GWP Med
			3.2.2.2. Preparing central Coast Day 2013 with the theme of Climate Variability and Change	PAP/RAC
			3.2.2.3. Developing media packages	PAP/RAC
			3.2.2.4. Regional Workshop for Members of Parliaments and Media on climate variability and change with emphasis on interlinked ICZM and IWRM issues	PAP/RAC with GWP Med
			3.2.2.5. Contribute to build capacity and advance policy dialogue on climate variability and change with emphasis on ICZM and IWRM issues	GWP Med With UNEP/MAP
			3.2.2.6. Assessment of Non-Regret Policies and Actions for Climate Variability and Change in relation to water and the coastal area in the Mediterranean	GWP Med
		3.2.3. Regional assessment of Climate Change Adaptation for	3.2.3.1. Policy document including recommendations for integrating climate variability considerations into marine	GWP-Med with

Component	Outcome	Output	Activity	Responsible Partner
		Mediterranean Coastal Zones and integration into policies/plans	and coastal zone planning	UNEP/MAP
	3.3. Project experience and lessons disseminated to larger IW community	3.3.1. Project web site created following IW:Learn standards, and further linkages with IW:Learn made	3.3.1.1. Project web site and contributing to IW LEARN	UNEP/MAP
4. Project Management	4.1 Project implemented effectively and efficiently to the satisfaction of partners	4.1.1. Capable human resources, consultation and Efficient systems support project implementation		UNEP MAP
		4.1.2. Monitoring and advisory mechanisms support project implementation		UNEP MAP

Table 6: Overview of the Project's Components, Outcomes, Outputs and Activities

4.1 Component 1: Establishment of a climate variability and change information sharing platform

4.1.1 Introduction

51. This component will be executed by Plan Bleu/RAC and UNEP/MAP. Its aim is to strengthen the coordination for a long-term regional monitoring program of climate variability with consensus on objectives, targets, impact indicators and implementation modalities. The objective here is not to build a climate/coastal data base from scratch but to assess the current data bases in countries as well as on regional level, and propose a coordinating mechanism to use these data sets. In doing so, an analysis of other regional assessments and research will be made in order to stimulate synergy and avoid duplication of efforts. This will be supported by a web based data platform on climate variability and change and ICZM information, with particular focus on the environmental and economic impacts of climate variability and change in the coastal zone. The monitoring database will integrate national and regional ICZM monitoring processes and in doing so will contribute to on-going work within the ICZM Protocol to the Barcelona Convention (in the context of the above mentioned Action Plan for the Implementation of the ICZM Protocol). Its outcome will be a multi country data platform on climate data and research supporting ICZM planning and management.

52. The Outputs of Component 1 are as follows:

- Assessment of regional and national programs for monitoring and tracking Climate Variability and Change and its impacts, including capacity assessments
- Regional consensus achieved on mechanism for Climate Variability and Change data sharing.
- Online Multi-country Information Sharing Platform on Climate Variability and Change monitoring data in coastal areas developed

4.1.2 Inception Phase activities and revisions

53. Plan Bleu have analyzed the national and regional reports (from the preparation phase of the project) in the further development of the activities and 2012 work-plan. Plan Bleu also organized 7 National Workshops with relevant national experts in Albania, Montenegro, Bosnia & Herzegovina, Morocco, Egypt, Algeria and Palestine. A relevant workshop was held in Tunisia in the context of the partners' visit in the country to finalize the location and the details of the Tunisian demonstration project. Workshops in Libya and Croatia are expected to be held by mid 2014. The workshop in Syria is not expected to take place given the political situation in the country. The dialogue, build on the national reports prepared during the project preparation phase, focused on the data and monitoring programs on climate in order to provide inputs for the platform.

54. A meeting was held on 6 June between project partners and UNEP/GRID-Geneva at their premises where the characteristics of the Platform were discussed and it was agreed that UNEP/GRID-Geneva will assist in its development.

4.1.3 Detailed description of activities

55. The outputs and activities of Component 1 are described below, with any changes from the original Project Document mentioned at the end of each Activity's section:

Output 1.1.1. Assessment of regional and national programs for monitoring and tracking climate variability and change and its impacts, including capacity assessments

Activity 1.1.1.1: Identify existing climate variability and change monitoring program and available data in each participating country, as well as options for data sharing in view of developing a multi-country Information sharing platform.

Executing partner: Plan Bleu

56. This activity will build on the national reports prepared during the project preparation phase, and will further specify data availability and sharing options according to what is needed for the multi-country information sharing platform, i.e. data to describe the climate variability and change indicators identified in 1.1.3.1. For that purpose, one day and half or two day workshops with relevant national experts (involved in monitoring programs and data collection/analysis/sharing) are being held in each participating country to update and validate national reports and also discuss and select the possible data sharing, gaps and capacity for future assistance in view of developing a multi country information platform, as well as with those responsible for developing SEIS.

57. National experts will have the opportunity to comment on the selection of climate variability and change indicators proposed and make suggestions for improvement. The national reports should be updated based on the recommendations resulting from the workshops. Reports will be produced for each national workshop which will feed into the regional synthesis (Activity 1.1.1.2.).

No major changes have been made further to the original Project Document

Activity 1.1.1.2: Regional synthesis of data availability and gaps as well as sharing options

Executing partner: Plan Bleu

58. Under this activity a regional synthesis of climate variability and change data availability and gaps as well as sharing options will be prepared, based on the national reports and the preliminary regional reports prepared during the project preparation phase, as well as the outcomes of the national workshops. This synthesis will be presented at a regional meeting jointly organized by UNEP/MAP and Plan Bleu/RAC for fostering discussions towards a consensus on climate variability and change data sharing. The report will give a comprehensive overview of the state of information sources in the region related to climate variability and change and an assessment of what sources will be appropriate for inclusion in the regional

climate variability and change platform. The report will also analyse the ICZM relevant information sources at national (coming from national workshops) and at regional levels. The draft Synthesis Report will be submitted to countries' representatives after all workshops have been held.
No major changes have been made further to the original Project Document

Output 1.1.2. Regional consensus achieved on mechanism for Climate Variability and Change data sharing.

Activity 1.1.2.1: Regional Consensus /validation of synthesis report

Executing partners: UNEP/MAP and Plan Bleu/RAC

59. In the previous activity countries will participate in the process of gathering information of the availability of sources of data and information related to climate variability and change. As a result of this participative exercise, a synthesis report will be prepared, which will serve as the basis for achieving consensus on data and information sharing. In order to gather the consensus of countries on the sharing of climate variability and change monitoring and research data, UNEP/MAP with Plan Bleu/RAC will organise one regional meeting in early 2014 (combined with Activity 1.1.1.2), with two main objectives: (i) present the Synthesis on data and meta data availability and gaps and validate the options for information sharing (activity 1.1.1.2.) and (ii) validate the possible design features (terms of reference) of the Multi-country data platform.
Changes to original Project Document: A single regional meeting is envisaged instead of 3.

Output 1.1.3. Online Multi-country Information Sharing Platform on climate variability and change monitoring data in coastal areas developed

Activity 1.1.3.1: Identify a set of climate variability and change indicators

Executing partner: Plan Bleu

60. Plan Bleu will involve a group of experts (e.g. from national weather services and WMO, economists involved in the socio-economic assessment in component 2, climatologists, ICZM experts), with the aim of identifying a set of relevant indicators of climate variability and change. A workshop will be organized for this purpose. The core set of indicators will be proposed for discussion by mid 2014. A core set of indicators will be produced and could be structured in the following groups:

- Indicators to measure the vulnerability of coastal areas,
- Impact indicators of climate change,
- Indicators to assess the effectiveness of ICZM strategies and progress of the implementation of the ICZM Protocol (articles linked to climate change),
- Indicators to measure the effectiveness of adaptation measures.

61. The respective study will refer to the national and regional reports produced by countries and by CMCC and other consultants in the preparatory stage of the Project. In addition to the agreed set of indicators, the activity will propose the organisational setting for data collection and information distribution. These indicators will build upon indicators from MSSD,

SEIS, MSFD, EcAP, SWIM/Water Directive and also Strategy Framework Directive Marine. These indicators could also feed into the above strategies/directives. Discussions are needed with EC and MAP to identify expert representatives (UNEP/MAP and Plan Bleu/RAC will follow up).
No major changes have been made further to the original Project Document.

Activity 1.1.3.2. The Online Multi-country Information Sharing Platform on Climate Variability and Change monitoring data

Executing partner: Plan Bleu with assistance from UNEP/GRID-Geneva

62. The Platform is provisionally referred to as MedICIP (Mediterranean Integrated Climate Information Platform).
Under the discussions with UNEP/GRID-Geneva, the following characteristics of the Platform were agreed upon:

63. Goals *of the platform:*
The MedICIP platform will allow to:

- Exchange knowledge, information, data and metadata on climate variability and change, impacts, vulnerability an adaptation measures in participating countries.
- Support the implementation of ICZM protocol by giving access to a maximum of relevant data sets and information (such as that on management methods for climate risk and adaptation)
- Serve as support to integrated climate risk and opportunity management in a number of socio-economic sectors.
- Respond to the objectives of the Global Framework for Climate Services (GFCS).
- Make use of expertise available in participating countries

The platform *will have the following content:*

- A metadata catalogue of available data sets related to climate change/variability and ICZM
- Link to geospatial data sets available for direct download
- Links to reference information on climate change impacts and adaptation from national institutions
- Links to institutions (and possible other national platforms)
- List of national and regional zones vulnerable to climate change impacts. (Vulnerabilities and risks (by sub-region and by sector) / General adaptation strategies and measures.
- Links to research, review and data reports.
- Links to existing monitoring programs on climate change and variability and to information available in participating country.
- Training material for sharing geospatial data (see below)

The platform *will have the following functionalities:*

- Be linked to an underlying state-of-the-art Spatial Data Infrastructure (SDI) able to hold a local metadata catalogue, to harvest external metadata catalogues (e.g. PEGASO catalogue) and to serve data and metadata through interoperable and standardized web services
- An online Mapping interface (based on the same technology than the PREVIEW platform) allowing users to:

- display geospatial data sets
- Export maps as PDF file
- embed maps in other website with a dedicated map widget
- visualize data directly on Google Earth
- Integrate data coming from other sources using Interoperable web services.
- search for data and/or metadata by: keywords, countries, thematics
- download available data sets in vector or raster format (as appropriate)

➢ A reference information database allowing users to:

- search for reference information/institution/stakeholders/experts/existing monitoring programs/reports on climate impacts and adaptation, by: keywords, countries, thematics

Technology used

64. The platform and the capacity building workshops will be based entirely on reliable open-source software. This is important in order to build an efficient, scalable and customizable platform, with interoperable local SDIs in the countries of interest. This also avoids licensing software costs. Long-term hosting of the Platform is under discussion.

65. Full coordination with the FP7 PEGASO consortium will be established in order to ensure full interoperability between their metadata catalogue (http://pegasosdi.uab.es/catalog) and MedICIP. Additionally, synergies/cooperation of the Platform with other projects/initiatives is envisaged:

- EEA's Climate-Adapt platform (http://climate-adapt.eea.europa.eu/)
- African Center of Meteorological Application for Development (ACMAD)
- Sahara and Sahel Observatory (OSS)
- World Bank Climate change knowledge portal (http://sdwebx.worldbank.org/climateportal/index.cfm)
- FP7 AFROMAISON Discovery Broker

66. Changes to original Project Document: UNEP/GRID-Geneva will assist in the development of the Platform. Its characteristics are presented in greater detail. Linkage with PEGASO's platform is intended.

Activity 1.1.3.3: Testing and improving the Information Sharing Platform

Executing partner: Plan Bleu with assistance from UNEP/GRID-Geneva

67. The information-sharing platform will be available for a test, and users will be requested to fill in evaluation forms. The outcomes of this test will enable to further improve the platform. The platform will be made available to users, maintained and improved by GRID-Geneva for a minimum of two years after the end of the project. It is crucial that the platform remains active and maintained beyond this time span. For that purpose, funding arrangements will need to be finalized during the project's lifetime. Training for 3-4 experts from each participating country for Spatial Data Integration (SDI) and data uploading is envisaged under Activity 3.2.2.5.
Changes to original Project Document: Merging formerly separate activities on testing and improving the platform. Mentioning of training workshops (Activity 3.2.2.5)

4.2 Component 2: Strengthening the knowledge base on regional climate variability and change

4.2.1 Introduction

68. This component will be executed by Plan Bleu, PAP/RAC, GWP-Med and UNEP/MAP. In order to enrich the understanding of the effects of climate variability and change in the Mediterranean, this component will consist of an analysis of data on environmental and socio-economic impacts of climate variability and change, the implementation of available methodologies and tools in two pilot sites in order to assess impacts and evaluate coastal management response options, and a regional assessment of socio-economic impacts of climate variability and change and adaptation options in coastal zones for various scenarios providing background for advancing policy making.

69. The Outputs of Component 2 are as follows:

- Regional analyses of Climate Variability and Change impacts in terms of sea level rise and storm surges, of changes in water characteristics and marine acidification, and with special focus on river deltas and on the identification of vulnerable areas/hotspots
- Assessment of environmental and socioeconomic impacts in two critically vulnerable sites, and evaluation of response options.
- Regional assessment of socio-economic impacts of Climate Variability and Change and adaptation options in coastal zones for various scenarios

4.2.2 Inception Phase activities and revisions

Support to MedPartnership ICZM demonstration projects

70. The relevant Activity (formerly 2.1.2.1.e) that involves the development of a coastal plan in Reghaia, Algeria, a Transboundary Integrated management coastal plan in the Buna/Bojana basin in Albania and Montenegro and National ICZM strategies in Montenegro and in Algeria has been moved as Output 3.1.3 – Activity 3.1.3.1 under Component 2 as appropriate.

Assessment of climate impacts and response options in 2 demonstration sites

71. The former 8 separate Activities relating to the 2 demonstration projects have been merged to two activities, one for each site.

Regional analyses and assessments of climate impacts on the environment and socio-economic sectors

72. During the meeting of project partners with UNEP/GRID-Geneva at their premises on 6 June, it was agreed to explore the ways in which UNEP/GRID-Geneva can assist in the preparation of the assessments.

Integration of climate issues into the TDA for the Mediterranean

73. The Project Document envisaged that the Trans-boundary Diagnostic Analysis (TDA), which is science-based analysis of trans-boundary water-related concerns and opportunities that exist in multi-country surface water, ground water, and coastal/marine water systems, be updated with a view to integrating the climate variability and change issue, the aspect that was not prominent when the Mediterranean TDA was prepared in 2005. However, it is now considered that a sectoral revision of the TDA would not produce many results and it would have only minimal impact on stakeholders if the full revision of TDA will not take place. The Project will, on the other hand, and particularly during the implementation of Components 1 and 2, generate a wealth of data and information on climate variability and change, as well as produce national and location-based assessments of physical, environmental and socio-economic aspects. In addition, through a detailed analysis and synthesis of other relevant regional initiatives and projects, a comprehensive base for mainstreaming the climate variability and change issue into ICZM strategies and policies will be achieved. Therefore, instead of the revision of TDA, it is proposed that the results of all activities in components 1 and 2 will be used as a basis to provide policy recommendations for the integration of climate change and variability into national policies and ICZM planning (Output 3.2.3) with the aim of supporting the finalisation of the Regional Framework for Adaptation to Climate Change in the Mediterranean Marine and Coastal Zones, to be adopted by the meeting of the Contracting Parties of the Barcelona Convention.

Selection process for the 2 demonstration sites

74. The criteria for the selection of the locations where the two demonstration projects will be held were agreed at the expert meeting in Split in March 2012, and are as follows:

- location should be a hot-spot of climate vulnerability,
- relevant data must be available,
- good working relationships with local partners and the government,
- existing or planned development to be impacted by climate variability and change,
- existing policy processes and plans to connect to.

The list of needed data was also defined.

75. On May 10th 2012 the official invitation was sent to the MedPartnership national focal points of all eligible countries to apply for the pilot application of the DIVA and Climagine in their country. NFPs were invited to investigate the availability of the data defined in the data wish-list, and to inform PAP/RAC on the availability of the requested data. The same invitation was proposed to the countries at the Project Inception Workshop, on May 17th 2012 in Istanbul and two more reminders have been sent during the June to all eligible countries. Up to the end of June, PAP/RAC had received applications from Croatia, Tunisia, Montenegro and Palestine. During the MedPartnership 3rd Steering Committee meeting in Istanbul, verbal interest was noted by Algeria and Morocco, but was not then officially confirmed in writing.

76. The decision on the pilot application sites was announced on July 6th by the PAP/RAC and the Blue Plan/RAC 2012, and letters were sent to all the MedPartnership Focal Points on the 11th July 2012. Among 4 applications, Palestine was unfortunately not eligible (for use of GEF funds for a national demonstration), and Montenegro is currently supported extensively

through the ICZM activities in the MedPartnership. Tunisia and Croatia both present very interesting case studies to also compare between the Adriatic and North African region, with their different issues. The Minister of Environment of Tunisia and the Deputy Minister of Environment of Croatia expressed their interest to apply DIVA and Climagine in their countries and confirmed availability of most of the data needed

77. The location where the Croatian demonstration project will be implemented was selected to be Sibenik-Knin County in central Dalmatia where the river Krka flows into the Adriatic Sea. The selection was made, after a thorough examination by PAP/RAC, for the following reasons:

- When contacted, the County authorities expressed willingness and commitment to prepare such a plan and readiness to provide in-kind co-financing. Furthermore, the Šibenik-Knin County Prefect, Mr. Goran Pauk, expressed the above in a letter sent to PAP/RAC;
- The County Spatial Plan exists and it provides conditions for the preparation of ICZM Plan;
- Most of the data needed for the preparation of the plan already exist, either in the institutions of the County or in the relevant national institutions:
- The area has a long coastline, while the coastal area, composed of administrative units (municipalities and communes) is highly developed and inhabited by the majority of the population of the County, which makes it suitable for the coastal management;
- The coastal area of the County is highly vulnerable to the impacts of climate variability and change;
- The area is highly valuable from the biodiversity point of view, and it is home to several national parks and marine protected areas;
- Institutional capacities exist in County planning and other institutions and preparation of the plan will be an opportunity to increase their capacity for ICZM and coastal climate change adaptation planning;
- The Krka River runs through the county and it is highly susceptible to the impacts of climate change.

78. Regarding the final selection of the location where the Tunisian demonstration project will be implemented, discussions with Tunisian authorities and local organisations were held during spring and summer 2013. In October 2013, a meeting was held in Tunisia between project partners and government officials and institutions. It was agreed that the demonstration site will be Kerkennah island, linked to the respective management plan recently finalized in the Gulf of Gabes (GEF/World Bank "Gulf of Gabes Marine and Coastal Resources Protection"). Additional funds will be sought under UNEP/MAP's PoW 2014-15. The Djerba area was also flagged as of great importance and funds are to be sought to replicate similar activities there in the future. GWP-Med will be coordinating the demonstration project and APAL was selected to be the main coordinator at the national level. . The Tunisian authorities have promised that a national management committee, chaired by the Ministry of Equipment and Environment, will be created for the monitoring and facilitation of the implementation of the project in close relation with the executing partners. Three workshops are envisaged under the demo project, to be provisionally held in Spring 2014, Autumn 2014 and Spring 2015.

Tools and methodologies to be used in the demonstration projects

DIVA model - Dynamic Interactive Vulnerability Assessment

DIVA (Dynamic and Interactive Vulnerability Assessment) model and database is an integrated, global research model for assessing the biophysical and socio-economic consequences of sea-level rise and associated extreme weather events under different physical and socio-economic scenarios, which also considers various adaptation strategies. (www.diva-model.net; Hinkel, 2005; Hinkel and Klein, 2009) . The model was co-developed with, and builds upon, a global coastal database that contains information on biophysical and socio-economic coastal characteristics. The database relies on a segmentation of the world's coasts (excluding Antarctica) into 12,148 linear segments and associates about 100 pieces of data with each segment concerning the physical, ecological and socio-economic characteristics of the coast. This approach has been unique in the sense that it integrates data and methods for studying coastal processes from a range of different disciplines. DIVA has been widely used for global and continental scale assessments of sea-level rise impacts, vulnerability and adaptation (e.g., Nichols et al., 2010; McLeod et al., 2010; Hinkel et al. 2010; Hinkel et al. 2011; Vafeidis et al., 2008; Vafeidis et al., 2012) .
DIVA has been used in a wide range of projects funded by NERC, DEFRA, DECC, DFID amongst others, including the impacts of sea-level rise in Africa as part of UNEP's Climate Change Adaptation programme

79. In order to maximise the success of the Component 2, PAP/RAC analyzed different methodologies for the assessment of environmental and socio-economic impacts and adaptation options. Numerous methodologies have been used for these assessments, from simple to more sophisticated, integrated methods, developed by the interdisciplinary teams. For the purposes of the project, it was concluded that the maximum benefit for the stakeholders will be achieved by using the most widely used and among the most recognised methodologies – DIVA - for this task. During 2011 PAP/RAC got in touch with the team that developed the DIVA methodology. Considerable exchanges through different communication channels were performed since then, aiming to shape possible collaboration and the potential outputs of the project. With the same aim, PAP/RAC organised a meeting in Split in March 2012. Besides PAP/RAC team, the key author of DIVA and the PAP/RAC's senior consultant on these issues attended the meeting. At the meeting the objectives, outputs and work plan for this activity were defined. In addition, experts agreed on the details of the necessary methodological upgrade, as well as on defining needed information for the application of the upgraded methodology. Experts agreed on the necessity to develop the list of needed data, as well as the criteria for the selection of the pilot sites. Namely, certain amount of data is indispensible for the DIVA method to produce the results, so that the existence of data and particularly willingness of the countries to provide data are indispensible precondition for applying DIVA. After the meeting the wish-list of data was defined, as well as the criteria for the selection of the pilot sites.
A brief description of DIVA is given in the box below:

80. Based on the results of the meeting mentioned above, upgrading of the methodology

started. The DIVA applications have been useful for identifying hotspots of coastal vulnerability and informing international climate policy negotiations. The results of the present DIVA model are, however, not practical at scales required to produce information useful for ICZM. To this end, coastal data need to be represented in more detail and in consideration of the specific geographical and socio-economical contexts. For the needs of the pilot projects, a methodology for downscaling the DIVA data model was developed.

81. Plan Bleu, developed an ad hoc prospective methodology for elaborating possible futures of vulnerability and adaptation paths in the identified critical coastal areas. It built on Plan Bleu's experience with the Imagine participatory method that it has been developing for 20 years. For the needs of the demonstration projects, Imagine was upgraded into Climagine to specifically take into account climate variability and change. The activity consisted of the desktop preparatory work on the methodology and a workshop with experts on climate variability and change, ICZM and prospective methodology. Plan Bleu organized a meeting in May 2012 with relevant experts about systemic and prospective methods in general in order to gain some useful methodological elements. The objective of this workshop was to share concrete experiences of prospective, at various scales, and the methods and tools, to identify strengths and limitations of different approaches and tools, and thereby freeing runways for adaptation and improvement of prospective approaches implemented by the Blue Plan - both thematic and sector oriented at the regional and systemic and/or integrated locally through the method of prospective systemic and participatory territorial Imagine. Following this first workshop, another meeting was held in July 2012 in order to work on the adaptation of the Imagine method and how it can be upgraded for this project (*Climagine*).
A brief description of Climagine is given in the box below:

Imagine/Climagine

The Blue Plan in conjunction with Dr Simon Bell (Bayswater Institute, UK) developed the Imagine approach in order to address sustainable coastal zone management needs in the Mediterranean. This approach facilitates the shaping of a sustainable development vision and area project by engaging stakeholders within a participatory process intended to describe, assess and examine the past, present and future levels of sustainability of a local system by means of indicators, setting goals and monitoring the system's progress towards sustainable development.

Imagine is based on four steps process. The first one is named "Reflect and understand" and allows stakeholders to understand the system, the context of the area, and the key issues at the local level. Some rich pictures are used to support participants in showing graphically complex situations. Rich pictures help to sum up the real situation as perceived by stakeholders in the shape of a freehand cartoon-type representation.

The second one is named "Connect and investigate" and allows to identify key sustainability indicators, to clarify their definition and assess their sustainability values. During the second participatory workshop, participants determine the ten to twenty key indicators which are representative of the system & establish the "band of equilibrium".

The third step is named « Model and explore » and allows stakeholders to brainstorm on each assumption. The third stage is devoted to build scenarios.
The last step is named "Do and suggest". The final stage of "Imagine" consists of marketing and promoting the results of the approach as well as drawing up a communication strategy which would guarantee the implementation of the action plan.

Based on systemic and prospective analysis, indicators and the concept of sustainability threshold, it is a dynamic, participation-based process which draws on the expertise of local stakeholders (www.planbleu.org/imagine).
Climagine will be an adaptation of Imagine in order to consider the needs of DIVA model and will be structured in two main steps. Briefly, following the first analysis about the combination between DIVA and Climagine, the first workshop, on the basis of existing local studies, will allow to define the main issues, discuss the first set of indicators and offer assumptions for scenarios.
The second workshop on the basis of the DIVA outputs (maps) will be dedicated to show stakeholders what are the results and what it is possible to analysis with DIVA model.

82. An expert meeting to combine the DIVA and Climagine methodologies was organised in November 2012 by PAP/RAC with a contribution by Plan Bleu. The two complementary methodologies selected to be combined here already have a respected record of implementation. However, due to the specificities of the Project they had to be adapted to reflect the Project's needs, goals and objectives. The first step was to set up the team for the upgrading and/or development of the two methodologies in order to make them complement each other. Soon after, and early into the project's implementation, PAP/RAC and Plan Bleu core project teams met and exchanged the characteristics and details of both methodologies and discussing the points where they would be adapted. The main task was to decide on how to combine the two methods, one scientific and other participatory, in order to maximize possible outcomes. Work plan and the outputs for both activities, methodological and the application on two pilot sites were defined. The meeting, held on November 19th, resulted with the workplan for 3 parallel line of activities, including a list of conclusions précising inputs and outputs of a different stages Prior to that meeting, PAP/RAC already organized an expert meeting in Split (March 2012) with the aim of defining possible outputs of this project activity, from the perspective of DIVA, possible workplan and the budget needed. At the meeting the road map has been agreed and several decisions related to possible future collaboration to assess socio-economic impacts of climate variability and change taken. Experts agreed on the details of the necessary methodological upgrade, as well as on how to define needed information for the application of the upgraded methodology. Experts agreed on the list of data needed, as well as on the criteria for the selection of the pilot sites.

83. While specifying the content of the Tunisian demo project, it emerged that it would valuable to apply tools to assess changes to coastal ecosystems and beaches from climate change, such as erosion and coastal and riverine flooding, and to link them with the Climagine and DIVA models. The model RiVAMP, developed by UNEP/GRID-Geneva, provides for assessing the climate impacts on coastal ecosystems and for formulating response options. Following consultation, that concluded with a meeting between project partners (MAP UNEP, BP/RAC, GWP-Med) with UNEP/GRID-Geneva on the 6th of June 2013, it was agreed that UNEP/GRID-Geneva will be involved in the Tunisian demonstration project by implementing the RiVAMP methodology in the selected site. A brief description of RiVAMP is given in the box below:

Risk and Vulnerability Assessment Methodology Development Project (RiVAMP)

This tool was conceived in order to develop a methodology that takes into account environmental factors in the analysis of disaster risk and vulnerability. The purpose of RiVAMP is to use evidence-based, scientific and qualitative research to demonstrate the role of ecosystems in disaster risk reduction, and thus enable policymakers to make better-informed decisions that support sustainable development through improved ecosystems management. RiVAMP projects starts with an inventory of all existing scientific studies and relevant collection of data to avoid re-creating what already existed. A national and local experts consultations is run to identify the processes which led to the current situation and to explore expert's potential solutions. Local community consultations are also run to retrieve information from inhabitants. In this project, the consultations will be run through "Climagine" workshops. The collected information are used and integrated in the geospatial analysis.
The science-based component of the methodology consists of satellite imagery analysis and other remote sensing techniques (e.g. use of aerial photographs), Geographic Information System (GIS) mapping and analysis, statistical analysis and modeling the buffering effects of coastal ecosystems on the coastline under conditions of sea level rise and storm surges.

4.2.3 Detailed description of activities

84. The Outputs and Activities of Component 2 are described below, with any changes from the original Project Document mentioned at the end of each Activity's section:

Output 2.1.1 Regional analyses of climate variability and change impacts in terms of sea level rise and storm surges, of changes in water characteristics and marine acidification, and with special focus on river deltas and on the identification of vulnerable areas/hotspots

Activity 2.1.1.1: Develop a methodology for the regional analysis of physical and socio-economic impacts of climate variability and change

Executing partner: Plan Bleu with assistance from UNEP/GRID-Geneva

85. A methodology for the analysis of physical impacts of climate variability and change (climatic parameters, extreme events, seal level, sea water characteristics, groundwater water quality, etc) and their consequences for ecosystems and human activities at the regional level will be developed using the set of indicators identified in Component 1 (1.1.3.1). Plan Bleu will do a review and will produce a state of the art of existing methodologies which deal with this

topic. It should be a scoping and rapid assessment of existing methodologies and tools to evaluate impacts of vulnerability and adaptation to climate change, based for example on UNFCCC compendium. Then Plan Bleu/RAC will mobilize relevant experts (e.g. those involved in outputs 1.1.1 and 1.1.3) to develop and validate the methodology. The agreement of the selected methodology will be finalized by mid 2014 during a workshop. The methodology will have to allow finding the most vulnerable areas in the region, in particular in the participating countries, in addition to those already well known (i.e. Venice and Nile Delta). Plan Bleu also plans to develop the methodology in using national accounts data and the result of an internal report named MedSea, which is about the sustainability of economic activities in relationship with coastal zones. The methodology will consider the different human activities on the coast and the climate parameters. The objective is to see how the climate variations could impact human activities (e.g. fisheries, industries, cities etc).
No major changes have been made further to the original Project Document

Activity 2.1.1.2: Collection of data on indicators on physical impacts of climate variability and change at regional level

Executing partner: Plan Bleu

86. It will be based on the available data identified in Component 1, as well as other existing literature on climate change scenarios and impacts. It will be a complementing and a wide Mediterranean collection of information fed by Component 1.
No major changes have been made further to the original Project Document

Activity 2.1.1.3: Analysis of data on environmental and socio-economic impacts of climate variability and change and identify their consequences for ecosystems and human activities and identify vulnerable activities

Executing partner: Plan Bleu with assistance from UNEP/GRID-Geneva

87. The analysis will be carried out following the methodology developed in 2.1.1.1 and on the basis of the data collected in 2.1.1.2. It will give an overview of expected physical impacts of climate change in coastal areas and their consequences for ecosystems and human activities. A report will present the impacts of climate variability and change in the Mediterranean and also highlight hotspots and priority areas based on those environmental and socioeconomic impacts. The report of the methodology should be fed by PEGASO and CLIM Run results and also by Plan Bleu's climate change programme. The different parameters will be mapped and crossed in order to assess the vulnerability of coastal territories and to identify the most critical areas.
The draft report of the methodology will be ready in mid 2014. The final Report should be launched at a high level event in 2014 (or at the Barcelona Convention Conference of Parties in 2015).
No major changes have been made further to the original Project Document

Output 2.1.2. Assessment of environmental and socioeconomic impacts in two critically vulnerable sites, and evaluation of response options

88. PAP-RAC and Plan Bleu will work jointly to assess the environmental and socio-economic impacts of climate variability and change for contrasted scenarios in the 2 selected sites, in

Croatia and Tunisia. PAP/RAC will work with economic modelling tools while Plan Bleu will develop a participatory methodology. GWP-Med will complement the Tunisian case for both models and will facilitate integration of RiVAMP elements applied by UNEP-GRID.
The methodology selected by PAP/RAC for estimating economic costs of climate variability and change will build upon the existing DIVA model, upgrading it for the climate variability, taking into account the latest works on the adaptation deficit and scaling it down to the national level. It is expected that the development of this methodology will contribute to more precise analysis of the adaptation deficit in the coastal zones.

89. Plan Bleu will develop and implement a participatory methodology for elaborating possible futures of vulnerability and adaptation paths in 2 critical coastal areas, building on its experience with the *Imagine* approach. It will generate several scenarios of impacts and adaptation paths according to local stakeholders' knowledge and perceptions.

90. The combination of the 2 approaches will enable users to compare the respective outcomes, advantages and limits of these approaches. The outcomes of one approach will be valued as much as possible by the other one, e.g. the scenarios built through Plan Bleu's participatory method will take into account the outcomes of PAP/RAC's modelling, and the associated damages and adaptation costs of these scenarios will be accessed through PAP/RAC's methodology. Both executing agencies will link with other MAP components (especially SPA/RAC for biodiversity issues) and MedPartnership executing agencies (UNESCO-IHP in particular, for groundwater) to assess complete impact on coastal ecosystems.
During the Inception Phase it was decided that UNEP/GRID-Geneva will further strengthen the Tunisian case by applying a methodology based on RiVAMP in order to assess disaster risk for the selected site, demonstrate the role of ecosystems in disaster risk reduction and enable policymakers to make better-informed decisions that support sustainable development through improved ecosystems management. GWP-Med will assist in the integration of the three models (DIVA, Climagine, RiVAMP) and will technically facilitate the project implementation in the country.

Activity 2.1.2.1. Croatia demonstration: Developing, upgrading and combining tools; implementation of the project; dissemination of results.

Executing partners: PAP/RAC and Plan Bleu

91. Šibenik-Knin county in central Dalmatia where the river Krka flows into the Adriatic Sea was selected as the site for the demonstration in Croatia.
As already mentioned above, the DIVA and Climagine methodologies were upgraded and developed for the needs of the project and combined in a complimentary way in order to maximize possible outcomes.
Plan Bleu has selected and contracted a Senior Consultant on the participatory approach to implement Climagine. PAP/RAC, jointly with the County of Šibenik-Knin, has identified almost 100 various potential stakeholders to be invited at the Climagine Workshop.
PAP/RAC and Plan Bleu will produce a users' guide on the methodology Climagine and publish and disseminate the Report on upgrading the DIVA method for climate variability and adaptation deficit. The elaboration of the guide will be an upgrade of the latest Imagine guide and it will be a practitioner's guide. It will give some methodological elements on how to use Climagine, and will be illustrated by schemes, tables and pictures in order to help its

implementation. It will be upgraded by following all ideas and recommendations provided by experts during workshops organized. The guide is under development and is expected to be published by mid 2014**.**

92. The DIVA model will assess the impacts of gradual climate change in terms of sea-level rise, as well as, of coastal flooding, and the impacts of current and future climate variability in terms of extreme weather events. For coastal flooding, the current adaptation deficit will be estimated. The bottom up assessment will complement this analysis. Particular attention will be given to the implication of the climate variability and adaptation deficit. Efforts will also be made to adapt the produced information in order to be used for the preparation of the regional development plans and ICZM plans and strategies and their respective public consultations. Actions will be divided into types of actions with regard to cost actions: those actions involving changes in land use planning practices (low cost), and those involving major investments, including hard measures, if justified (high cost). For each the issue of timing is critical but especially for major investments. Here methods of assessment based on options values, that allow for changing information over time will be deployed. In this way the investment is realised in the allotments, and the final decision between several options may be taken sometime in the future. The detailed actions identified from the bottom-up assessment will start from the top-down assessment results, potentially focussing on the vulnerability hot-spot, and once it is complete it will be checked for final consistency with the top down assessment. Remaining discrepancies will be noted and the reasons for those explained.

The following steps of the "top-down" assessment will be completed at the pilot sites:

i. Data collection on a variety of natural and social system parameters such as elevation, land-use, coastal geomorphology, coast typology, coastal wetlands, rivers, coastal population, uplift/subsidence, coastal defences and assets.
ii. Re-segmentation of the coastline and attribution of more detailed data to the new coastline segments. The segmentation of the coastline is based on a number of criteria such as geomorphological characteristics, coastal population density and administrative boundaries. The aim of the segmentation is to define autonomous units that will respond in a uniform way to rises in sea levels. These units are of variable length and constitute the basis of the data system that the model employs for spatially representing coastal information.
iii. Development of sea-level rise and socio-economic scenarios. Sea-level rise scenarios will include recent estimates of a possible large contribution of the melting of the ice sheets of Greenland and Antarctica to global mean sea-level rise.
iv. Adjustment of DIVA model and data. This step will take into account the limitations in data availability.
v. Assessment of the current adaptation deficit for coastal flooding.
vi. Simulation of future impacts for several sea-level rise and socio-economic scenarios.
vii. Analysis of results. The outputs of the simulations will be analysed in the context of data and model limitations and with respect to the specific characteristics of the study area.

The "bottom-up" assessment will complement this analysis, in particular through:

i. The implication of the adaptation deficit for the purposes of action will take account of resources and priorities.
ii. Impacts of current deficit and expected deficits will be evaluated.

iii. Plans for regional development will be critical to possible future damages. It is critical that these be subject to some re-consideration in the light of the expected climate impacts. At the same time the extent to which these plans can be modified is limited by political factors that have to be borne on mind.
iv. Any proposed modifications to address the present deficit and future deficits will have to be subject to public consultations and a proposed set of possible actions identified on from this.
v. Actions will be divided into the two types of actions: those involving changes in land use planning practices, and those involving major investments. For each, the issue of timing is critical but especially for major investments. Here, methods of assessment based on options values, that allow for changing information over time will be deployed.

93. The detailed actions identified from the bottom-up assessment will start from the top-down assessment results (DIVA) and once it is completed it will be checked for final consistency with the top down assessment. Remaining discrepancies will be noted and explained.

94. The participatory prospective methodology *Climagine* will be implemented through 4 workshops involving local experts and stakeholders. The expected outcomes are: an analysis of the current situation, the elaboration of contrasted scenarios of vulnerability and adaptation paths.

95. The methodology and the outcomes of pilot case studies will be presented and discussed at the MedPartnership Final ICZM Regional Workshop, whose main aim will be capacity building. Target audience for this workshop is MedPartnership national focal points, who are also focal points for the Project. They will be presented the outputs and outcomes of all ICZM related activities within the 2 projects, including environmental and socio-economic assessment of the climate variability and change. In addition, another workshop will be organised where the methodology for top-down and bottom-up environmental and socio-economic assessment of the climate variability and change, including its application and the outcomes of the pilot cases will be presented to the selected sectoral experts, environmental economists or climate change specialists from the countries participating in the project, with the aim of capacity building and of making the most use of the obtained information. The workshop is expected to propose additional channels for mainstreaming of the obtained information. Also, creation and enhancing of the existing networks of opinion makers aiming to increase sensitivity of the national policies and strategies on climate variability and change is expected to be achieved.

Changes to original Project Document: 8 Separate activities merged into two, one for each site.

Activity 2.1.2.2. Tunisia demonstration: Developing, upgrading and combining tools; implementation of the project; dissemination of results.

Executing partners: PAP/RAC, Plan Bleu and GWP-Med with the assistance of UNEP/GRID-Geneva

96. As already mentioned above, the demonstration site will be the Kerkennah islands. The overall aim of the project is to provide information and tools to guide the discussions at

different decision levels, towards a better local management of coastal zones and adaptation to climate variability and change. Project results will be linked to the respective management plan recently finalized in the Gulf of Gabes.
The demo project is envisaged as having three dimensions:

- Socio-economic impacts of climate change; to be addressed by DIVA
- Stakeholders involvement; through Climagine workshops
- Ecosystem assessment; to be addressed by RiVAMP

97. The steps towards the launching of the DIVA modelling process can be summarised as follows:

- meeting with the national expert institution;
- presentation of the DIVA model;
- presentation of the data requirements/inputs to run the model;
- presentation of main expected outputs (for example: loss of land/cost of land loss, dike capital cost/dike maintenance cost, nourishment cost/cost of migration and adaptation) based on climate and socio-economic scenarios;
- engage the dialogue with Tunisian experts on the availability of the data;
- begin the collection and compilation of data in close cooperation with the Ministry of Environment and relevant Tunisian institutions.

98. In order to enrich our understanding of the effects of climate variability and change in the Mediterranean, the DIVA implementation will consist of analyses of climate environmental impacts and their consequences on socio-economic activities. Mainly, it is expected that the implementation of this methodology will contribute to more precise analysis of the adaptation deficit in the coastal zones. Most of the results of the DIVA implementation will be presented through maps and charts. A more detailed insight on how to best present the national results to local stakeholders, within the Tunisian demo will be provided when the pilot area will be well defined.

99. Improvement and further development of the existing DIVA model and its coupling with Climagine is foreseen.

100. RiVAMP's implementation in Tunisia will start by analysing and assessing the following five key areas:

- Ecosystems and ecosystem services;
- Environmental change, as a result of human activities;
- Climate change;
- Local livelihoods and vulnerability; and
- Environmental governance.

101. These five areas aim to establish a systemic understanding of human and ecological interactions, and to identify the driving causes of ecosystem degradation and the consequences to increasing hazard vulnerability and exposure. By focusing on governance, RiVAMP seeks to determine opportunities for integrating ecosystems-based approaches in land-use planning, livelihoods development, disaster risk reduction and climate change adaptation strategies.
The science-based component of the methodology consists of satellite imagery analysis and other remote sensing techniques (e.g. use of aerial photographs), Geographic Information

System (GIS) mapping and analysis, statistical analysis and modelling the buffering effects of coastal ecosystems on the coastline under conditions of sea level rise and storm surges.

102. The end results are expected to be:

- Collation of available coastal erosion data
- Satellite imagery analysis
- Coastal ecosystem significance
- Projections: Morphodynamic Modelling
- Final results and recommendations to be discussed during "Climagine" workshops and incorporated into coastal/marine planning
- Model, Manual and training, further used by national experts for planning in other coastal areas (perhaps also used to train even more experts nationally).

103. The implementation of "Climagine" in Tunisia will incorporate the completed results of the DIVA and RiVAMP models and will be structured as follows:
Initially, the relationship between DIVA and "Climagine" will be analysed in more detail and existing local studies relevant to the project's scope will be reviewed. Then a series of workshops involving all relevant stakeholders (eg national and local authorities, institutions, scientists, NGOs, local economy representatives) will be held. The first workshop will allow stakeholders to define the main issues, drivers and pressures in the coastal zone area. Main issues and dimensions of influence of climate change have to be recognized. The second workshop will allow discussing the first core set of environmental, economic and social indicators and offering space for discussion about assumptions for scenarios. The third workshop will be dedicated to show stakeholders what are the results of each scenario using DIVA outputs (such as maps) and what is possible to further analyse with the DIVA model. This workshop will also allow Tunisian stakeholders to draft some recommendations on how to address the expected impacts of climate variability and change in the selected coastal zones by mainstreaming them into the ICZM process towards a local action plan.

104. Requirements for "Climagine":

- Results and analysis of DIVA and RiVAMP, along with other reports and assessments at the national and local level.
- Experienced facilitator. Target a good local moderator/coordinator and define a motivated local team made up with 2 or 3 national experts.
- Full engagement of key stakeholders in all workshops. List of invited participants has to be highly arranged. Take care to invite all representatives for institutions and people who play a role in the area. On the other hand, maintaining contact between workshops is essential for the success of the workshops; people have to be motivated with mails and calls. They have to feel that their regular attendance is necessary for the success of the whole process.

105. Considering that "Climagine" will be implemented where management plans are in place, the end result will be recommendations for the revision of coastal/marine planning and legislation to incorporate climate variability and change issues.

106. The implementation process of the tools and methodologies in the Tunisian demonstration project is shown in the following flowchart:

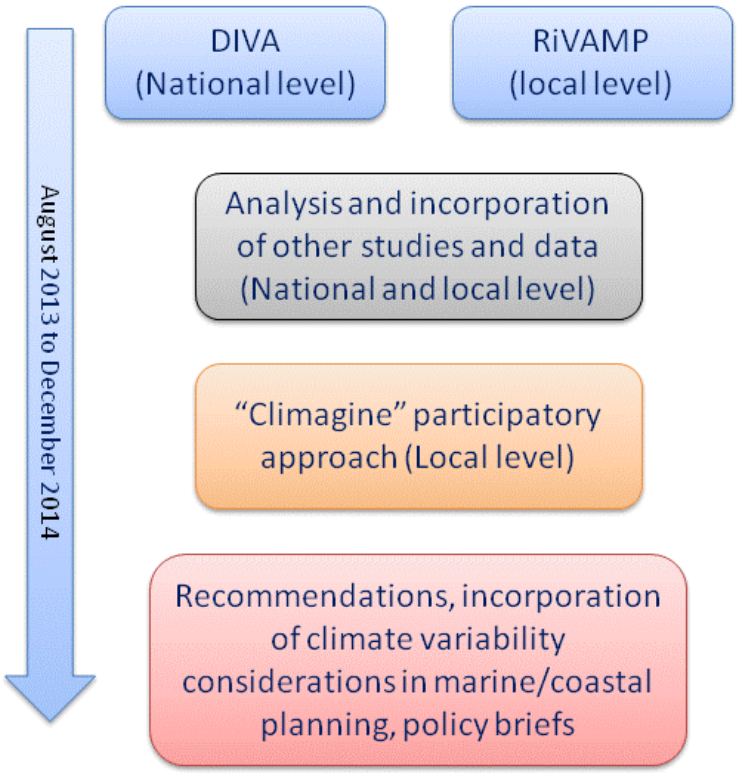

Figure 4: Overview of the implementation process of the tools and methodologies in the Tunisian demonstration project

Output 2.1.3. Regional assessment of socioeconomic impacts of climate variability and change and adaptation options in coastal zones, for various scenarios

Activity *2.1.3.1: In-depth analysis of Impacts of Climate Change in specific hotspots or sectors (to be identified)*

Executing partner: Plan Bleu with the assistance of UNEP/GRID-Geneva

107. The methodology developed under Activity 2.1.1.1 will be implemented for the analysis of climate variability and change impacts on socio-economic activities, which will include the identification of the vulnerabilities of key sectors/topics (e.g. tourism, agriculture, etc), and defines response options at local level. This activity is related to indicators of impacts. The analysis will be based on the outcomes of previous regional and local studies as well as other literature. It will give an overview of expected socio-economic impacts of climate change in coastal areas, according to existing climate models and scenarios available at global, regional and local levels (analyzed in outcome 2.1.1), and will explore their socio-economic consequences for the different key sectors. Adaptation options will be explored. A workshop with the authors of the sectoral studies will facilitate such cross-sectoral analysis. A final report will be produced.
This activity will run in the first half of 2014. One workshop is scheduled at the end of 2014.

4.3 Component 3: Support to ICZM Protocol implementation and capacity building

4.3.1 Introduction

108. This component will be executed by UNEP/MAP, PAP/RAC, and GWP Med. Enhanced knowledge, capacity and awareness together with experience sharing mechanisms will create an enabling environment for implementation of the ICZM Protocol in general and for the integration of climate variability and change elements into ICZM planning process in particular. At the national level, inter-ministerial committees will contribute to multi-sectoral dialogues on policy and management processes in the Mediterranean, and facilitate the mainstreaming of the ICZM Protocol and climate variability and change responses into national plans. Targeted capacity building will enable stakeholders to fulfil these roles. In addition to strong platforms for exchange within the region, project experiences will be shared within the larger international waters community, through IW:Learn, IWC, IWENS, WACDEP among others. The outcomes of the Component 3 of the Project will be: (1) a science based methodological approach that will enable countries to integrate climate variability and change issues into ICZM policies, plans and programmes; (2) Increased knowledge, capacity, and awareness improving inter-sectoral coordination in mainstreaming climate variability and change issues into the ICZM protocol implementation process; and (3) Project experiences and lessons disseminated to larger IW community. The outputs of this component will be as follows:

- Methodology and analytical tools for mainstreaming climate variability considerations into national ICZM planning and practices developed considering synergy with other related national plans (IWRM, NSSD, CCA, etc) (Lead Agencies: PAP/RAC and GWP/Med);
- Integrated management plan developed in one pilot site (Croatia) of the activity 2.1.2.2 (Lead Agencies: PAP/RAC);
- Provide support to MedPartnership ICZM demonstration projects in Montenegro and Algeria with regard to Climate Variability and Change
- Existing Inter-ministerial coordination mechanisms capacitated to mainstream climate variability and change issues into ICZM planning processes (Lead Agency: UNEP/MAP);
- Awareness raising, policy dialogue and capacity building for Policy makers and stakeholders in participating countries on implications of climate variability, ICZM protocol and other related national policies (Lead Agencies: PAP/RAC and GWP/Med);
- Regional assessment of Climate Change Adaptation for Mediterranean Coastal Zones and integration into policies/plans (Lead Agency: UNEP/MAP);
- Communication, dissemination, linkages with IW:Learn (Lead Agency: UNEP/MAP).

4.3.2 Inception Phase activities and revisions

109. Related to the Component 3, PAP/RAC, jointly with GWP-Med and UNESCO-IHP, has been working since 2010 on an Integrative Methodological Framework (IMF) for ICZM, IWRM and aquifers. This activity was implemented in the context of the MedPartnership. One of the topics within the IMF is the climate change, and it is considered as the cross cutting issue for all involved sectoral methodologies. In May 2012, a document on integrating climate change into the ICZM planning process has been prepared by PAP/RAC as a contribution to the IMF. This document will also be crucial for the implementation of the Project.

110. PAP/RAC has carried out the technical upgrade of the MedOpen, virtual training course on ICZM, in order to make room for addition in the future of a new module on climate variability and change and ICZM, which will be developed within the Project.

111. GWP-Med co-organised the Regional Workshop on Water and Climate Change Adaptation in Trans boundary Basins from 25-26 April 2012, in Geneva, under UNECE's lead. It aimed at exchanging experiences on climate change adaptation and vulnerability strategies, best practices, success factors and lessons learned. It brought together more than 120 participants from all over the world including Project's countries, allowing for interaction and sharing of knowledge. The workshop focused on vulnerability assessment in transboundary basins, ecosystem-based adaptation in trans boundary basins, selecting and implementing adaptation measures, integrating the different levels and sectors, economic aspects of adaptation to climate change. It was organised under the lead of UNECE, the Alliance for Global Water Adaptation (AGWA), the Global Water Partnership Mediterranean (GWP-Med), the Global Environment Facility (GEF), the World Meteorological Organization and the European Commission, with the support of Netherlands, Germany, Finland and Switzerland. The Workshop was held back to back with the fifth meeting of the UNECE Task Force on Water and Climate (27 April 2012). The activity is part of Output 3.2.2.6.

112. The 'Assessment of Non-Regret Policies and Actions for Climate Variability and Change in relation to water and the coastal area in the Mediterranean' was elaborated, particularly focusing on the development of guidelines for mainstreaming climate change no-regret action into IWRM policies. It was elaborated in synergy with and under the EU supported Programme Sustainable Water Integrated Management (SWIM). An additional chapter focusing particularly on the coastal zone would complement the assessment. The activity is part of 3.2.2.7

113. Contacts were made with DG Research of the European Commission and possible synergies were identified with related on-going projects (e.g. CLIMB and DROUGH-R&SPI projects) aiming at developing joint action on research, policy making and practice with the CLIMB and DROUGH-R&SPI projects.

114. Communication with PAP RAC and UNESCO IHP has been close, particularly for the development of the Integrative Methodological Framework for ICZM, IWRM and aquifers (see paragraph 16) where the climate change component will be further advance through Project's activities, as well as for the case of Buna/Bojana that may be one of the demo areas (see related progress reporting by PAP RAC). The activity is part of Outputs 3.1.1.1 and 3.1.2.1.

115. Aiming to respond to demands raised by Croatia and Tunisia for demonstration action at local level, PAP/RAC will focus on the former and GWP-Med on the later. Due to content that entails aligned application of the DIVA, Climagine and RiVAMP models in Tunisia, the part of

Output 3.1.2 led by GWP-Med was shifted to and merged with Activity 2.1.2.2. Under Output 3.1.2 activities have been carried out by PAP/RAC, including:

- Contracting of a Senior ICZM Consultant to act as a Team Leader and of an expert in climate change and oceanography
- Establishing contact and engaging in discussions with local and national authorities, including the Ministry of Environmental and Nature Protection, the Ministry of Physical Planning and Construction, the National Committee for the development and implementation of the Croatian Coastal and Marine National Strategy, the local County Institute for Spatial Planning

116. The former activity 3.2.2.5. ("Regional Stakeholder Workshop on climate variability and change and water, as a contribution to the elaboration of the Action Plan of the draft Strategy for Water in the Mediterranean") was designed to link up and contribute to the elaboration of the Strategy for Water in the Mediterranean (SWM) within the Union for the Mediterranean. SWM includes adaptation to climate change among its four Chapters. Based on political grounds, the draft SWM is pending adoption since the UfM Ministerial Conference on Water (April 2010) and the anticipated technical drafting of the Action Plan has not been launched. Given these and recognizing the need for supporting capacity building and policy dialogue on aspects of climate variability and change, resources of Activity 3.2.2.5 will shift to and merge with former Activity 3.2.2.6 (now 3.2.2.5) on capacity building.

117. During the discussions between project partners and UNEP/GRID-Geneva, it was agreed that under former Activity 3.2.2.6 (now 3.2.2.5) they will organise three regional workshops with at least 4 experts from each country, for training on SDI and on calculating the setback zone according to Article 8 of the ICZM Protocol.

118. A Clearing House Mechanism (CHM) was part of the Project design under Activity 3.2.3.1, in order to provide easy-to-use information and best-practices for identifying most efficient and cost effective tools to assist policy makers to address climate variability and change impacts in the region. Since the Project's launching a number of such ICT tools have been developed by a range of institutions e.g. the European Environment Agency and programs e.g by DG Research. Thus, the Project's objective to contribute as a 'translator/transformer' of knowledge for decision making as well as a facilitator of experience sharing would be best served by using digested science for developing policy recommendations. Contributing to the Project objectives, this will be serviced under the now reinforced Activity 3.2.3.1 which has been merged with former Activity 2.1.4 into a Regional assessment of Climate Change Adaptation for Mediterranean Coastal Zones and integration into policies/plans. This activity may be expanded to finalize work undertaken in 2011 to develop a Climate Change Adaptation Framework for the Mediterranean for adoption by the Contracting Parties of the Barcelona Convention.

4.3.3 Detailed description of Activities

119. The outputs and activities of Component 3 are described below, with any changes from the original Project Document mentioned at the end of each Activity's section:

Output 3.1.1. Methodology and tools for mainstreaming climate variability considerations into national ICZM planning and practices developed considering synergy with other related national plans (IWRM, NSSD, CCA, etc)

120. Within the MedPartnership project PAP/RAC jointly with the GWP-Med and UNESCO-IHP is developing an Integrative Methodological Framework (IMF) for integration of coastal, groundwater, river and biodiversity management, with climate variability and change as a cross cutting issue. In addition, within the same project PAP/RAC has developed the Guidelines for Preparation of the ICZM strategies. In this activity, the IMF and the Guidelines for preparation of the ICZM strategies will be updated on the basis of the results of this project. It is expected that the information obtained within 2.1.2. will enable the project partners to expand the audience for the project results and for the ICZM in general. This type of information is expected to be of a high interest to many sectors, particularly those that haven't yet been sufficiently involved into the ICZM project. IMF is to be adapted to the wider audience, similar to what was the case within the MedPartnership project. This may be realized either through a separate publication, to be distributed with the IMF, or by the revision of the IMF itself.

Activity 3.1.1.1: Updating Guidelines on National ICZM Strategies and Plans with the climate change proofing tool

Executing partners: PAP/RAC and GWP-Med.

121. The aim of this activity is to develop methodology to mainstream the issue of climate variability and change into the coastal plans and strategies based on and linking with national ICZM, IWRM, regional development plans and climate-related strategies and plans. This activity is closely connected with the Output 2.1.2.1, since the information on expected economic and environmental costs is of major importance for planning in the coastal zone. Methodology for evaluating existing legislation policies and programs, such as climate change proofing and/or SEA or other as appropriate, is to be developed/adapted for the guidelines.
No major changes have been made further to the original Project Document

Activity 3.1.1.2: *Meeting of the DIVA/ClImagine experts with the IWG of MedPartnership*

Executing partners: PAP/RAC and GWP-Med.

122. One expert meeting of the IWG group and the experts developing output 2.1.2 is to be held with the aim of securing appropriate integration of the climate variability and change considerations into the final Integrative Methodological Framework for coastal plans and Guidelines for National ICZM Strategies that are to be published and disseminated in 2014. At this meeting the experts will decide which form, detailed objectives and the content this output will have.
No major changes have been made further to the original Project Document

Activity 3.1.1.3: *Developing on-line module for the climate variability and change to be integrated into MedOpen – virtual ICZM course*

Executing partners: PAP/RAC and GWP-Med.

123. An on-line training module on integrating climate variability and change aspects into the coastal plans and strategies will be developed and offered within the PAP/RAC MedOpen virtual training course. One run of the module with the live support is to be implemented in the third year of the project's implementation.
No major changes have been made further to the original Project Document

Output 3.1.2. Integrated management plan developed in one of the locations

Activity 3.1.2.1: Drafting of Integrated Management Plan integrating climate variability and change issues

Executing partner: PAP/RAC.

124. Using the results of the application of the combined methodologies for economic modeling and participatory approach in the demonstration site in Croatia under activity 2.1.2.1 (Šibenik-Knin County) an integrated management plan is going to be developed, using methodology and tools developed within 3.1.1. The selection of the location was made having regard to the conditions in the country, and on the extent of involvement of the stakeholders in the location selected in 2.1.2.2.

125. Preparation of the Integrated Management Plan will satisfy the requirements of the ICZM Protocol for the Mediterranean, of the Water Framework Directive, and, in its marine part, as much as possible the requirements of the Marine Strategy Framework Directive. The decision on the site for the integrated management plan was made in 2012, based on the willingness of the government and ability to act fast. A small team of national consultants will be contracted to prepare the Scoping report with the aim to identify priority issues and the objectives of the plan. Integration of the climate variability and change is of a key issue for this coastal plan. Information obtained by DIVA will be one of the key inputs for the plan. Scoping report and the Inception Report will be presented to the stakeholders during the 1st harmonization meeting. Upon the adoption of the scoping report, a broader analysis of the identified issues will be undertaken by the interdisciplinary national team. Based on the findings of the analysis, the integrated management plan aiming at establishing an optimal governance framework that will lead society towards sustainable coastal development will be proposed. This plan will be presented to the stakeholders with the aim to be adopted and by this adoption, among other, to ensure its implementation.
Changes from original Project Document: Croatian site selected for the preparation of ICZM Plan. The part of the Activity led by GWP-Med was shifted to and merged with Activity 2.1.2.2.

Output 3.1.3. Provide support to MedPartnership ICZM demonstration projects in Montenegro and Algeria with regard to Climate Variability and Change

Activity 3.1.3.1: Coastal plan in Reghaia; Trans boundary Integrated management coastal plan in Buna/Bojana; and National ICZM strategies in Montenegro and in Algeria

Executing partner: PAP/RAC

126. Based on the needs and gaps identified in the four PAP/RAC MedPartnership demonstrations (Coastal plan Reghaia; Trans boundary Integrated management coastal plans

Buna/Bojana; and National ICZM strategies in Montenegro and in Algeria), as well as achieved progress and possibilities for upgrade, support to the existing demo projects will be secured. Since the MedPartnership demonstrations were launched in 2010 and in 2011, due to the lack of time to apply fully the outcomes of this project, support will be provided based on the requests of the MedPartnership pilots. As requested by the Montenegro ICZM Strategy team, the rapid vulnerability assessment is the most needed contribution to the National ICZM Strategy, particularly its presentation through GIS maps. Within the four MedPartnership demonstrations, some aspects of the climate change have been taken into account in all sites. The new project will complete the needs of the MedPartnership demonstrations.
Changes from original Project Document: Activity transferred from Component 1

Output 3.2.1. Existing Inter-ministerial coordination mechanisms capacitated to mainstream climate variability and change issues into ICZM planning processes

Activity 3.2.1.1.: Facilitating inter-ministerial coordination for incorporating climate variability and change issues into ICZM

Executing partner: UNEP/MAP.

127. The MedPartnership has resources dedicated to supporting relevant ministries and the MedPartnership Focal Points to undertake inter-ministerial coordination. The MedPartnership had initiated activities to assist countries to establish Inter Ministerial Committees (IMC) by preparing the ToR for their operation and providing modest financial assistance to trigger their establishment, but received little response from Focal Points. In the Third Steering Committee of the MedPartnership (May 2012) it was discussed and agreed that these funds would be provided upon proposals received from each Ministry, to either re-enforce an existing IMC (for example Montenegro has established such a committee for the ICZM implementation) or for the establishment of a new IMC. In each case the IMC would meet on a regular basis, involving all relevant ministries and experts from the MedPartnership and Climate Variability project, with the aim also to provide recommendations to ministries for the integration and harmonization of plans and sustainability of activities undertaken n both projects. The IMCs have been established for Montenegro and Croatia, and additional country IMCs will be supported in 2014 (linked to longer term processes, such as ICZM implementation).
No major changes have been made further to the original Project Document

Output 3.2.2. Awareness raising, policy dialogue and capacity building for Policy makers and stakeholders in participating countries on implications of climate variability, ICZM protocol and other related national policies

128. Raising awareness and promoting dialogue and sharing of experiences among policy makers and key stakeholders on the implications of climate variability and change with particular emphasis on the coastal zone is of recognized importance for successful planning and implementation of strategies. A set of related activities will enhance understanding of impacts as well as of available policy and applied tools to tackle them through an integrated approach that will primarily inter-link ICZM, IWRM, regional development plans and climate-related policies and plans.

No major changes have been made further to the original Project Document

Activity 3.2.2.1: *Assessment of the banking and insurance sector*

Executing partners: PAP/RAC and GWP-Med.

129. An assessment of the climate variability and change impact on the insurance, reinsurance and banking sector with an emphasis on the countries of the project will be performed. Special attention will be given to the insurance against the weather related risks and availability of loans for the real estates in the close proximity of the sea. In addition, reflection of some other typical coastal issues that could be tackled through insurance and banking sector will be also taken into account (like spatial planning, development, tourism, water, forest fires). The results of the assessment will also be used to write a journal article, extracts of which will be translated into national languages of the project countries and sent to the different journals in the eligible countries for the occasion of the Coast Day, using MAP network and with the help of the national focal points. Article will also be disseminated through the PAP/RAC, Coast Day and the project web site as well as through appropriate on-line newsletters. Linkages will be made with WACDEP activities.
No major changes have been made further to the original Project Document

Activity 3.2.2.2: *Preparing central Coast Day 2014 with the theme of climate variability and change*

Executing partner: PAP/RAC.

130. For the project's second year, climate variability and change is proposed to be the central theme of the Coast Day. By that time, it is expected that this project will produce results to be presented at a major event. Central celebration of the Coast Day would be in one of the GEF eligible countries participating in the Project. The central celebration will include a workshop for the high level policy makers (activity 3.2.2.4.) aiming to present the results of the project. In this occasion, an Ambassador for the Coast, with the specific focus on the climate threats for the coastal zone is to be appointed. Support from one NGO and/or related multi-stakeholder platform is to be secured for the organization of the central public event. Coast Day Facebook site will provide an active support to the implementation of the campaign. A competition for the school pupils on the theme of the Coast Day will be implemented during the summer 2014, with the results and awards to be announced at the occasion of the Coast Day. A video-clip to be shared at the Coast Day Facebook site, as well as on the You Tube will be produced.
Changes to the original Project Document: Coastal Day 2014, not 2013

Activity 3.2.2.3: *Developing media packages*

Executing partner: PAP/RAC.

131. For this purpose a media package containing awareness raising set of materials on the topic of climate variability and change will be prepared, based on the actual knowledge of the climate variability and change threats for Mediterranean and of the project results. The package

will contain a power-point presentation, poster, bookmark, stickers, special CD and a USB stick for distribution, as well as, if funds will allow, the iPhone/iPad/Android application. Media package will also be available on-line at the Coast Day web site and at the Project/MedPartnership web site. This media package will be presented at the Regional Workshop (3.2.2.4) and at the 3 major events for the target policy makers in the region.
No major changes have been made further to the original Project Document

Activity 3.2.2.4. *Regional Workshop for Members of Parliaments and Media on climate variability and change with emphasis on interlinked ICZM and IWRM issues*

Executing partner: GWP-Med and PAP/RAC.

132. Members of Parliaments (MPs) and the Media are among key partners in applying and promoting integrated policies on environment and development at country level. MPs are responsible for elaborating and approving legal and regulatory instruments and controlling the government, while Media are key shapers of public opinion and promoters of public awareness. Climate variability and change as well as ICZM and IWRM are among areas of focus and interest of these groups. Furthermore, it is widely recognized that there are valuable experiences to be shared at regional level among these stakeholders, promoting dialogue and common understanding. In the Mediterranean, the Circle of the Mediterranean Parliamentarians for Sustainable Development (COMPSUD), consisting of around 70 MPs from 16 countries, and the Circle of Mediterranean Journalist for Sustainable Development (COMJSD), consisting of around 55 journalists from 14 countries, are structured still informal networks of such partners, facilitated since 2003 jointly by MIO-ECSDE and GWP-Med. Aiming to promote policy dialogue and exchange on good practices on climate variability and change with emphasis on ICZM and IWRM, two Regional Workshop for MPs and Media will be organized:
One, titled "Regional Workshop for Members of Parliaments on Climate Variability and Change in the Mediterranean Coastal Area" on 13-14 November. The other will be linked to the occasion of the Coast Day, on September 25, 2014. Civil society representatives will also attend enriching the dialogue. The Regional Workshops will also provide the opportunity to present and discuss the structure and findings of the Project, case studies, materials produced and recommendations for action.
No major changes have been made further to the original Project Document

Activity 3.2.2.5.: *Contribute to build capacity and advance policy dialogue on climate variability and change with emphasis on ICZM and IWRM issues,*

Executing partner: GWP-Med and UNEP/MAP with assistance from UNEP/GRID-Geneva

133. Aiming to contribute in raising capacity and advancing policy dialogue on the inter-linkages of climate variability and change, ICZM and IWRM, a Regional Workshop has already been held and 2 others will be organized in 2014.
The Regional Workshop on Water and Climate Change Adaptation in Transboundary Basins, co-organized by GWP-Med on 25-26 April 2012, in Geneva, under UNECE's lead offered a platform among decision makers and stakeholders for exchanging experiences on climate change adaptation and vulnerability strategies, best practices, success factors and lessons learned. The Workshop made possible the transfer of experiences from UNECE countries where the agenda is already advancing.

134. The second set of sub-Regional Workshops will target at least 4 national technical experts from each country and will focus on a) building capacity in several institutions for sharing geospatial data in a standardized way, in the context of the MedICIP Platform developed under Component 1 and b) training on the calculation of the coastal setback zone as referred to in Article 8 of the ICZM Protocol. In this context two regional workshops will be organized during the third semester of 2014, one in Tunisia, for French speaking countries and one in Istanbul for the rest. Regarding (a), the idea is to teach national experts how to set up their own Institutional SDI for efficiently sharing their metadata and data through web services. The platform would then harvest these web services and make their content immediately visible to the users and to other global platforms (such as the GEOSS – the Global Earth Observation System of Systems).

135. Changes from original Project document: Activity merged with former activity 3.2.2.5. Regional workshops focused on training on SDI and on setback zone calculation, to be implemented by UNEP/GRID-Geneva.

Activity 3.2.2.6.: Assessment of Non-Regret Policies and Actions for Climate Variability and Change in relation to water and the coastal area in the Mediterranean

Executing partner: GWP-Med.

136. 'No regret' policies and actions refer to strategic choices by governments, reflecting appropriate investments to options that have been already proven sustainable for water resources management, even under the conditions of uncertainty in view of the possible impacts of climate variability and change. These need to have the potential to be widely applied at both national and local scale and pay-off soon, including in the low income regions, where vulnerability is higher. They should include measures for which the necessary knowledge is already available, the needed political will is established, consensus in the society has been achieved, their applicability is tested and the capacity to implement them is in place, and their cost effectiveness and financial viability is tested. A desk-study assessment on non-regret policies and actions for climate variability and change in relation to water including a focus on the Mediterranean coastal zone was elaborated. This included the development of guidelines for mainstreaming climate change no-regret action into IWRM policies. It was elaborated in synergy with and under the EU supported Programme Sustainable Water Integrated Management (SWIM), providing also background to on-going policy processes in the region like those under MAP, the Union for the Mediterranean, etc. The assessment would be complemented with a chapter addressing particularly related challenges and policy options in coastal areas of the Mediterranean.
Changes to the original Project Document: Activity numbered 3.2.2.6 instead of 3.2.2.7

Output 3.2.3. Regional assessment of Climate Change Adaptation for Mediterranean Coastal Zones and integration into policies/plans

Activity 3.2.3.1.: *Policy document including recommendations for integrating climate variability considerations into marine and coastal zone planning*

Executing partner: UNEP/MAP.

137. Through incorporating the results of sub-components 2.1.1, 2.1.2, and 2.1.3 a regional analysis of climate variability and change will be completed, with the specific aim to provide policy recommendations for integration into marine and coastal zone planning. The activity may be expanded to finalize work undertaken in 2011 to develop a Climate Change Adaptation Framework for the Mediterranean for adoption by the Contracting Parties of the Barcelona Convention in 2015. The revised draft will be presented and discussed in a regional meeting in 2014 or 2015, possibly combined with the MCSD meeting.
Changes from original Project Document: This Output has been merged with former Output 2.1.4

Output 3.3.1. Communication, dissemination, linkages with IW:Learn

Activity 3.3.1.1.: *Project web site, communication, dissemination and contributing to IW LEARN*

Executing partner: UNEP/MAP.

138. The Project's web site is a key instrument for communication of its progress, outputs, outcomes, and key messages. This will be developed and maintained as part of the MedPartnership web site, in close collaboration with the manager of that site. Coordination among Project partners and the PMU will be facilitated by the PMU, in order to secure proper flow of information and feeding of the site with material. Furthermore, linkages with GEF IW:Learn will be made as needed, e.g. through elaboration of IW Experience Notes on subjects pertinent to the Project, participation and presentation of Project outcomes to related GEF IW conferences in the region and beyond, etc.

4.4 Component 4: Project Management

139. The project was designed to complement and almost be an additional component to the MedPartnership, given that during its design the issue of climate change and variability were not included. This project therefore adds the dimension of climate change and variability to the overall MedPartnership, and was designed to use the management and communication structure already established in the MedPartnership to be also more cost effective. The Project will be managed by the MedPartnership's Project Management Unit (PMU), i.e. by its Project Manager and the Marine and Coastal Expert, supported by consultancies.

4.4.1 Inception Phase activities and revisions.

140. Component 4, Project Management, is executed by the MedPartnership PMU. As mentioned the project was approved by the GEF CEO in January 2012. In March 2012 a consultant was hired to draft the initial Inception Report. A draft Roadmap was initially prepared and discussed at the 3rd Steering Committee of the MedPartnership in May 2012, where the third day was dedicated to the Climate Variability project. All the participating countries as well as partners several observers attended the meeting, with a total of around 50 participants. The meeting was concluded with the following major recommendations:

- Efforts undertaken by PMU so far in starting the inception phase activities and initiating the project activities by executing partners were acknowledged with appreciation;
- Every effort should be made that Inception Report is finalised and distributed to the participating countries, and legal agreements signed, by the end of June 2012.
- Some participants requested that a wider range of thematic issues be taken in consideration when assessing the impact of climate variability and change in coastal areas, and that possibilities be explored that the list of project executing agencies be expanded to incorporate eventual new activities.
- An assessment of the potential for synergies with other relevant projects currently being implemented in the region, such as PEGASO, CLIM-RUN, CLIM-ADAPT, WACDEP as well as with other initiatives and projects such as UfM and EU led initiatives and programmes (SWIM, H2020, other climate change related projects financed by the DG Research) should be carried out as a matter of priority.
- Revised workplan and detailed account of activities as presented by project partners was adopted and recommendation made that implementation of project activities starts as soon as possible in order to keep the original workplan and timetable unchanged.

141. Following this the draft Inception Report was completed in August 2012 and reviewed by UNEP DEPI Task Manager. As additional work was required, it was agreed to begin implementation of initial activities in parallel to the finalization of the Inception Report, to be discussed and adopted at the 4th Steering Committee meeting. In addition an intern started his term in the PMU to collect information on the complementary climate variability and change and ICZM projects and initiatives, relevant literature and country national climate change communications, in order to prepare the initial analysis, which will serve as the basis for extracting policy recommendations.

142. The following legal agreements have been prepared and signed:
- Internal agreement between UNEP/MAP and DEPI, signed on the12 June 2012
- Agreement with PAP/RAC signed on the 5th October 2012
- Agreement with Blue Plan signed on 10 December 2012
- Agreement with GWP-Med signed on 14 December 2012

143. In April 2013, a climate change consultant was recruited in order to support the project, finalize the Inception Report and prepare an "Overview of Climate Variability and Change in the Mediterranean" report, the first draft of which is Information Document #7 and is built upon the national and regional reports prepared during the preparation phase of the project in 2011.

144. It is expected that a request will be sent to global and regional climate change experts to participate in a review panel which will provide guidance on draft documents, including the Regional Assessments in Component 2 and the Policy Document that will feed into the Regional Framework on Adaptation in Component 3.

4.4.2 Institutional Framework and Implementation Arrangements.

145. The Project is designed to complement actions related to the existing UNEP/MAP GEF Strategic Partnership for the Mediterranean LME (MedPartnership) project, a program

developed to implement the priority actions agreed in the Strategic Action Programme for addressing land based sources of marine pollution in the Mediterranean Sea (SAP MED) and those contained in the Strategic Action Programme to protect Mediterranean biodiversity (SAP BIO). In fact, climate variability and change and their impacts on Mediterranean ecosystems were not considered during the design of MedPartnership in the early 00s. Their relevance, in particular for coastal zone resources and habitats, were in fact fully appreciated only in later years. The "complementary" nature of the project is reflected in the institutional framework and implementation arrangements adopted for its execution. The Project will in fact utilize the management and coordination structure of the UNEP/MAP led component of MedPartnership, and will benefit from the replication and communication strategy developed for the project, as shown in the figure below.

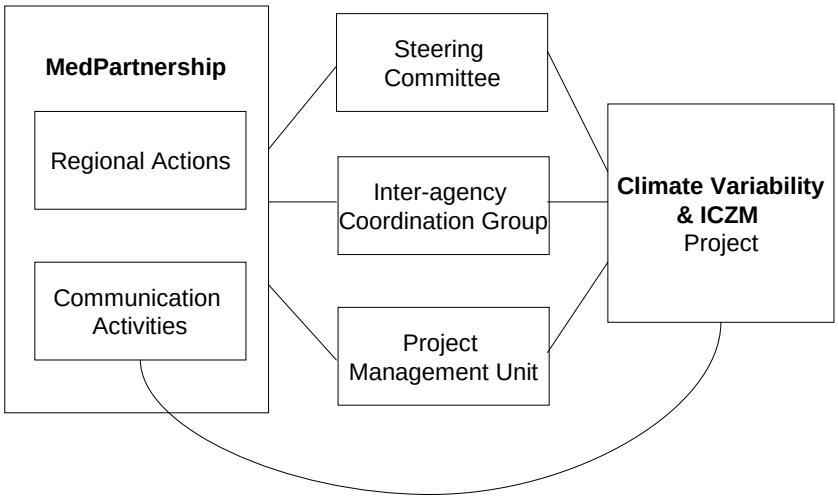

Figure 5: institutional Framework and relationship between MedPartnership and the project

146. The Implementing agency of the Project is UNEP/DEPI while the Executing Agency are the Coordinating Unit for the Mediterranean Action Plan (MEDU-MAP), Plan Bleu Regional Activity Center (BP/RAC), Priority Actions Programme Regional Activity Center (PAP/RAC) and Global Water Partnership – Mediterranean (GPW-Med).

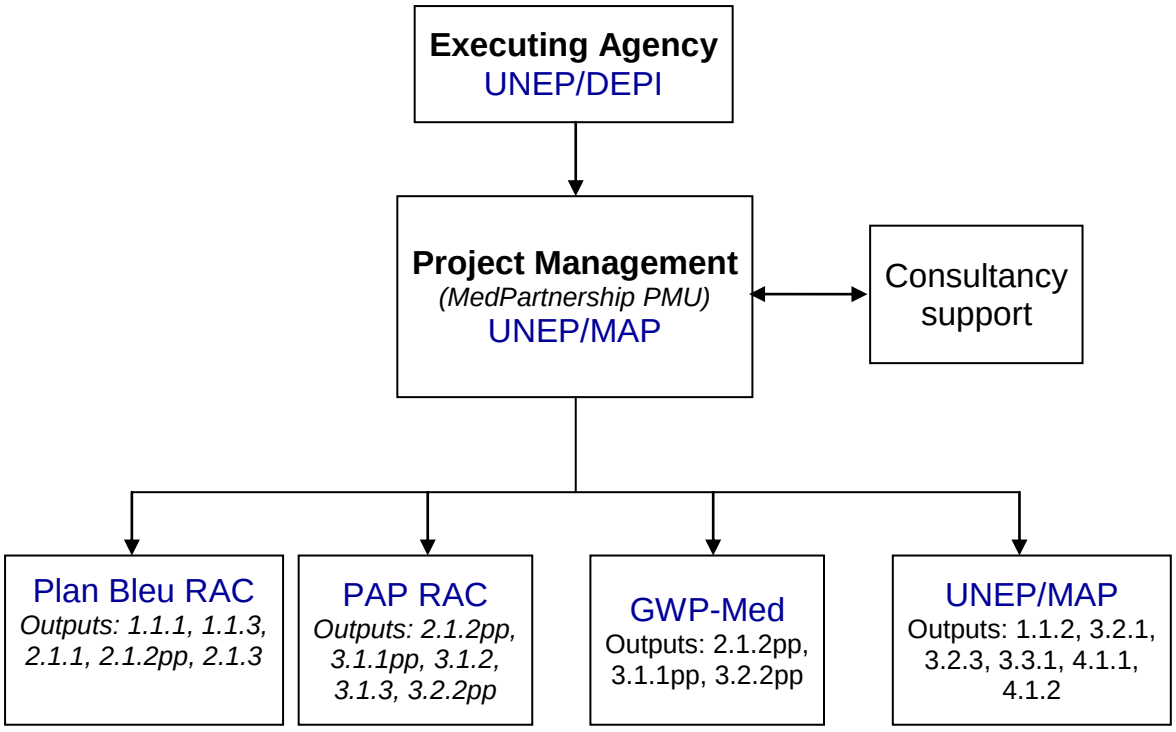

Figure 6: Project execution arrangements

147. As explained above, the Project will be managed by the Project Management Unit (PMU) of the Regional Component of MedPartnership, supported by additional consultancies. The PMU, will prepare the Inception Report, closely follow the implementation of project activities, handle day-to-day project issues and requirements, coordinate them and ensure a high degree of transnational and inter-institutional collaboration (international and regional organizations and donors). It will be responsible for production of six-month advance reports and six-month and annual expense reports. It will also assist the UNEP's EOU in preparing final evaluation of the project. The PMU will report to the Steering Committee.

148. The Steering Committee (SC) of MedPartnership will oversee the project execution and will act as the main policy body of the project. Members of the SC are national focal points from participating countries, representatives of UNEP, UNEP/MAP, the World Bank, the GEF Secretariat, and representatives of major donors.

The SC meets annually, back-to-back to the MedPartnership's Steering Committee, and will:

- Review the Annual Status reports submitted by the PMU;
- Review the reports prepared under the M&E activity; and
- Based on the above, make recommendations for the conduction of the business of the Project and if necessary take appropriate decisions for changes of the workplan, timetable and budget allocations

4.5 Project Financing: Overview of budget, budget issues, status of co-financing

149. The total project's value is USD 8,474,945. The project is financed with USD 2,298,545 from GEF grant, USD 2,380,000 in kind contribution from participating countries, USD 3,082,400 cash and/or in kind contribution from executing partners (GWP-Med, PAP/RAC, Plan Bleu) and finally with in kind contribution of USD 714,000 from UNEP/MAP. The cash and in kind co financing will complement the GEF funded activities as per the project's budget. Until the preparation of the Inception Report started, there has not been any change in the total commitments.

150. The detailed UNEP budget is attached as a separate working document.

5 Overall Work Plan and Budget and Detailed Activities for 2014

151. The detailed workplan and a list of meetings were prepared by all the partners during the Inception Phase of the project in order to plan, in a harmonized manner, all activities. Although some initial meetings to plan activities took place as early as February 2012, the full-scale start of the activities began following signature of legal agreement with executing partners (late 2012 and early 2013). The priority for the first half of 2013 has been for the further definition of activities, in particular the two demonstration projects, and coordination of activities with all relevant stakeholders. Successful start of the activities is important because the life span of the project is relatively short. The role of PMU is also critical in this early stage of the project's implementation, and its fullest resources need to be placed at the disposal of the Project.

6 Monitoring and Evaluation

152. The Project will be monitored and evaluated throughout project implementation. The basic M&E reporting is given in Table 7 below, and the Results Framework is presented in Annex I.

Type of M&E activity	**Responsible Parties**	**Budget US$** *Excluding project team staff time*	**Time frame**
Inception Workshop	• PMU (MEDU MAP) • UNEP DEPI	None	With the MedPartnership Third Steering Committee

			meeting, May 2012
Inception Report	• PMU and Executing Agencies • UNEP DEPI	None	March 2012 to October 2013
Annual Report	• PMU • External consultants when required • Executing Agencies	None	Annually
PIR	• PMU and Executing Agencies • UNEP DEPI	None	Annually (1 July to 31 June each year)
Steering Committee Meetings	• PMU • Project Steering Committee • UNEP DEPI • Executing Agencies	None	Following Project Inception and subsequently at least once a year
Finance Reports	• PMU and Executing Agencies	None	Half Yearly
Final External Evaluation	• PMU • UNEP EOU • External Consultants	10,000	At the end of project implementation (coupled with the MedPartnership Final Evaluation)
Terminal Report	• PMU	None	At least one month before the end of the project
Lessons learned	• PMU • External Consultants as required	None	2014 and presented at the final Steering Committee meeting
Total Indicative Cost - *Excluding project team staff time and UNEP staff and travel expenses*		10,000	

Table 7: Monitoring and evaluation reporting

6.1 Monitoring the progress of the project

153. The progress towards achievement of the targets as described in Annex I will be reported on a yearly basis as part of the MedPartnership's Annual Report. In addition, the Project Implementation Review (PIR) will be prepared, but not for the first year of project implementation, i.e. for the period from 16 January 2012 until 1 July 2012. The first full period for PIR was from July 2012 to July 2013, and was done in parallel with the MedPartnership's PIR. The half-yearly financial report of the project will be regularly produced. These documents will

be submitted to UNEP DEPI as Implementing Agency as well as shared with all Steering Committee members. As with the Inception Phase, a yearly detailed Work-plan and budget will be shared with the Steering Committee for review and adoption at the Steering Committee meeting, along with a detailed yearly progress report. Thematic and other publications generated as indicated in the work-plan will also be shared with all SC members. During the last three months of the project the PMU will prepare the Project Terminal Report. This comprehensive report will summarize all activities, achievements and outputs of the Project, lessons learnt, objectives met, or not achieved structures and systems implemented, etc. and will be the definitive statement of the Project's activities during its lifetime. It will also lay out recommendations for any further steps that may need to be taken to ensure sustainability of the Project's activities.

6.2 Independent Evaluation of the Project

154. Because of the short time span of the project, no mid-term evaluation is envisaged. An independent Terminal Evaluation will take place in conjunction with the evaluation of the MedPartnership. It will focus on the effectiveness, efficiency and timeliness of project implementation; and will present initial lessons learned about project design, implementation and management. The final evaluation will also look at impact and sustainability of results, including the contribution to capacity development and the achievement of global environmental goals. The Final Evaluation should also provide recommendations for follow-up activities. The organization, terms of reference and timing of the evaluation will be decided after consultation between the UNEP/DEPI and UNEP/MAP. The Terms of Reference for this evaluation will be prepared by UNEP-Evaluation and Oversight Unit in line with the GEF evaluation requirements.

7 Next steps

155. The Inception phase (March 2012 until October 2013) has resulted in a revision and further detailing of activities, as well as slightly changed budget breakdown reflecting some changes that have resulted mainly from the reduced number of countries participating in the project. The project is entering the critical phase now, when the implementation of the activities has to be launched and momentum for its implementation gained.

156. Next Steering Committee Meeting is planned for February 2014, jointly with the SC meeting for the MedPartnership. By the end of 2012, the section of the Annual Report, to be merged with the MedPartnership 2012 Annual Report, describes the highlights and presenting the detailed account of activities performed will have to be prepared. For the SC meeting, the partners will prepare their 2014 work plan and budget, and prepare proposals for revision of the project to be adopted by the Steering Committee.

ANNEX I - Revised Results Framework

PROJECT OBJECTIVE	Objectively verifiable indicators			Verification methods	Assumptions
	Indicator	Baseline	Target		
The objective of the project is to create an enabling environment for the integration of CV&C coping strategies into ICZM policies, strategies, plans and programs of Mediterranean countries by (i) strengthening the understanding of the impacts of CV&C on the coastal zones of the Mediterranean region and (ii) by establishing the needed information exchange mechanisms, capacity and regional pilot experiences.	Number of participating countries integrating CV&C considerations into their national ICZM policies, strategies and plans (P)	Present efforts to define ICZM Plans/ Strategies do not include consideration of CV&C expected impacts	The ICZM Plans/Strategies of at least two participating countries include CV&C coping strategies	Draft ICZM national plans/strategies/ policies	Governments of the participating Mediterranean countries are convinced of the importance of addressing climate variability and change as part of the implementation of the ICZM Protocol

	Objectively verifiable indicators			Verification methods	Assumptions
	Indicator	**Baseline**	**Target**		
Component 1: Establishment of a CV&C information sharing platform					
Outcome 1.1 Multi-country data platform on climate research supports ICZM planning and management	Platform designed according to coordination and harmonization needs and capacity assessments	Multi-country CV&C data exchange platform does not exist. Only numerous but fragmented research and monitoring initiatives	User-friendly, state of the art Platform, with data contributions from all countries and linking to other relevant regional/global databases	Terms of Reference for the Platform	Countries willing to consider providing free access to relevant information on their national CV&C monitoring and prediction systems
	Countries agree to sharing data and coordinate climate research. Relevant ICZM bodies in countries and stakeholders use harmonized CV&C indicators and actively participate by interacting with the platform.	There is no commitment by countries, relevant research bodies and stakeholders to systematically share data on CV&C	Formal consensus of all countries on CV&C data sharing presented in Regional Synthesis Report	Regional workshop to validate draft synthesis report	
Outputs for outcome 1.1: 1.1.1: Assessment of regional and national programs for monitoring and tracking CV&C and its impacts, including capacity assessments. 1.1.2: Regional consensus achieved on mechanism for CV&C data sharing. 1.1.3: Online Multi-country Information Sharing Platform on CV&C monitoring data in coastal areas developed					

	Objectively verifiable indicators			Verification methods	Assumptions
	Indicator	**Baseline**	**Target**		
Component 2: Strengthening the knowledge base on regional climate variability and change					
Outcome 2.1 Improved understanding of CV&C in the Mediterranean region, enables countries to assess impacts on the coastal environment.	All countries actively participate to the regional assessment of CV&C impacts based on agreed upon methodology and indicators, addressing (i) present and expected environmental and socio-economic impacts of CV&C on coastal zones, (ii) identification of vulnerable zones and hot spots, and (iii) response options.	As shown by PPG work, a regional view of expected CV&C impacts on coastal zones including identification of hot spots is not available in the region.	Report on regional assessment of CV&C impacts, including identification of vulnerable hot spots, future scenarios and response options, documents active participation of all countries	Assessment Report endorsed by the SC	Countries are willing to participate to the work, commit in kind resources and provide all relevant information.
	Countries capacities enhanced for assessing and planning responses to environmental and socio-economic impacts of CV&C in coastal zones at the local level	Lack of consolidated regionally recognized and tested methodology to assess CV&C impacts at local level hinders on the ground action	Methodology for assessing CV&C impacts and response options at local level developed and tested in two vulnerable zones, leading to climate-proofing of ICZM plans/strategies	Reports on (i) methodology, and (ii) results of its application in the two test sites, endorsed by the SC	Test sites will be safely accessible and local authorities and stakeholders willing to participate to the work.
Outputs for outcome 2.1: 2.1.1Regional analyses of sea-level rise and storm surges, of changes in water characteristics and marine acidification, with special focus on river deltas and on the identification of vulnerableareas/hotspots. 2.1.2 Assessment of environmental and socio-economic impacts and adaptation options in two critically vulnerable sites, and evaluation of response options. 2.1.3 Regional assessment of socio-economic impacts of CV&C and coping strategies in coastal zones for various scenarios.					

	Objectively verifiable indicators			Verification methods	Assumptions
	Indicator	**Baseline**	**Target**		
Component 3: Support to ICZM Protocol implementation and capacity building					
Outcome 3.1 Science based methodological approach enables countries to integrate climate variability and change issues into ICZM policies, strategies, plans and programs.	Pilot ICZM Plan produced for pilot site applying integrated methodological approach Coastal plan in Reghaia; Trans boundary Integrated management coastal plan in Buna/Bojana; and National ICZM strategies in Montenegro and in Algeria	Lack of ground tested science based methodological approach for integrating CV&C into ICZM planning	Methodology and tools for mainstreaming climate variability and change into national ICZM planning and practices developed and tested on the ground	Methodology endorsed by SC	Local stakeholders in pilot site willing to take action and cooperate
Outcome 3.2. Increased knowledge, capacity, and awareness improve inter-sectoral coordination in mainstreaming climate variability and change issues into the ICZM protocol implementation process.	Already existing governmental inter-ministerial coordination mechanisms include CV&C issues in their deliberations on ICZM protocol implementation	Existing bodies have no capacity to incorporate responses to CV&C impacts on coastal zones	Inter-ministerial coordination process enhanced in all project countries		Governments willing to engage in enhanced inter-ministerial coordination
	Regional and national workshops on capacity building	Limited national knowledge on SDI and capacity to calculate setback zones	National experts trained on Spatial Data Integration and on calculation of coastal setback zones.		
	Policy document including recommendations for integrating climate variability considerations into marine and coastal zone planning	Work undertaken in 2011 to develop a Climate Change Adaptation Framework for the Mediterranean remains unfinished	Feeding into finalizing of Regional Adaptation Framework		

Outcome 3.3 Project experiences and lessons disseminated to larger GEF IW community	Projects features prominently in IWC 6 and 7, and in IW LEARN website	GEF IW coastal zone projects lack focus on CV&C impacts and coping strategies	Project results and experiences broadly disseminated through IWCs and other IW LEARN mechanisms	Documentation reporting deliberations of coordination bodies addressing CV&C in coastal zones Number of Experience Notes and other documents and audio-visual materials produced for IW LEARN dissemination mechanisms and website	

Outputs for outcome 3.1:

3.1.1: Methodology and tools for mainstreaming climate variability considerations into national ICZM planning and practices developed considering synergy with other related national plans and strategies (IWRM, NSSD, CCA, etc)
3.1.2: Integrated management plan developed in one of the locations 2.1.2.2
3.1.3. Provide support to MedPartnership ICZM demonstration projects in Montenegro and Algeria with regard to Climate Variability and Change

Outputs for outcome 3.2.

3.2.1: Existing inter-ministerial coordination mechanisms committed to mainstream climate variability and change issues into ICZM planning processes.
3.2.2: Awareness raising, policy dialogue and capacity building for policy makers and stakeholders in participating countries on implications of climate variability on ICZM protocol and other related national policies.
3.2.3: Regional assessment of Climate Change Adaptation for Mediterranean Coastal Zones and integration into policies/plans

Outputs for outcome 3.3.

3.3.1: Communication, dissemination, linkages with IW:Learn