



Report of the meeting to present initial results of the assessment of the costs of climate variability & change for the Croatian coast and for the Šibenik-Knin County

PAP/RAC

(Split, November 4-5, 2013)





























### **REPORT**

# of the meetings to present initial results of the assessment of the costs of climate variability & change for the Croatian coast and for the Šibenik-Knin County

(Split, November 4-5, 2013)

### **Background information**

**Title:** "Integration of climate variability and change into national strategies to implement the ICZM Protocol in the Mediterranean".

**Implementing Agency:** United Nations Environment Programme

Executing Agencies: UNEP/Mediterranean Action Plan (UNEP/MAP),

Plan Bleu / Regional Activity Centre (PB/RAC),

Priorities Actions Programme / Regional Activity Centre (PAP/RAC) and

Global Water Partnership - Mediterranean (GWP-Med).

**Project duration:** 30 months

**Participating countries**: Albania, Algeria, Bosnia and Herzegovina, Croatia, Egypt, Libya, Morocco, Montenegro, Syria, Tunisia, and the Palestine Authority.

**Budget:** The total budget of the Project is 9.2 million USD. Out of it GEF will secure 2.2 million, while the remaining amount of 7 million USD would be secured by the participating countries and executing agency, and sponsors.

**Objectives:** The overall project goal is to promote the use of ICZM in the participating countries as an effective tool to deal with the impacts of climate variability and change in coastal zones by mainstreaming them into the ICZM process. Specific objectives of the project are:

- To strengthen knowledge on regional climate variability and change and their impacts and define their specific characteristics in the Mediterranean region;
- To strengthen partnerships, improve capacity building and establish mechanisms for exchange of data and information for integration of climate variability and change into concrete ICZM policies, plans and programmes

### Monday, November 4

### **Participation**

1. The first day of the meeting was attended by 22 participants, representing relevant Croatian authorities, institutions and academic community, as well as international institutions, Plan Bleu and PAP/RAC. A Complete List of participants (November 4) is attached as Annex I to this report.

### Agenda item 1: Welcome addresses and opening of the expert meeting

- 2. The meeting was opened by Ms. Zeljka Skaricic, PAP/RAC Director, who welcomed the participants. All the upcoming meetings of the week were announced and their importance was underlined regarding the implementation of ICZM in Croatia today, as well as the main related challenges.
- 3. The ClimVar project, within the framework of Medpartnership, is the first project for PAP/RAC, after 25 years, implemented in Croatia. This national initiative has a great demonstration potential for the Mediterranean and other European countries, for the integration of the socioeconomic impacts analysis of Climate Variability and Change in the building of ICZM strategies, plans and programmes.
- 4. A brief "tour de table" allowed to all the participants to present themselves. Then, the agenda was adopted, with the first day dedicated to the national level and the second to the Šibenik-Knin County. The Agenda of the 4 and 5 November meetings is available as Annex II to this report.

# Agenda item 2: Project "Integration of Climatic Variability and Change into Coastal Plans and National ICZM Strategies"

- 5. Ms. Daria Povh-Skugor, PAP/RAC Senior Programme Officer, presented the project and the expectations of the meeting. In her presentation she reminded the participants of the structure of MAP, the correlation between MedPartnership, ClimVar, the implementation of the ICZM Protocol and the support of the Climagine participatory method. Ms. Povh-Skugor's presentation will presently be available at <a href="http://www.pap-thecoastcentre.org/">http://www.pap-thecoastcentre.org/</a>.
- 6. In the discussion that followed a few points were raised, first of all related to the level of implementation of EU Directives such as the EU Flood Directive. Moreover, the issue of the environmental policy connectivity was raised. It was noted that in Croatia, economic and investment policy processes and the related documents, such as plans and programmes, were not compulsory, while, on the other hand, physical plans were mandatory, which generated serious problems. It was also noted that this particular issue was also very important regarding the upcoming EU Directive on Marine Spatial Planning. In this regard, PAP/RAC Director reminded the participants that the Directive, in its early planning stage, was supposed to be an MSP/ICZM one, and therefore she encouraged everyone not to give up on addressing that huge challenge for an integrated approach. It was also agreed that a better integration of economic processes in ICZM was needed, where economic development should be integrated in the planning process, and where new technologies would play a crucial role.

### Agenda item 3: Croatian efforts to get prepared for climate variability and change

- 7. Ms. Melita Zdilar from the Ministry of Environmental and Nature Protection, Department for Climate, the Ozone Layer and Sea Protection, joined the participants *via* Skype. She intervened instead of Mr. Radic who unexpectedly had to cancel his participation. She presented the Croatian efforts to cope with and prepare for climate variability and change. It was outlined that the provisions on climate adaptation are incorporated in the Law on Air Protection (O.G. 130/11). Ms. Zdilar's presentation will presently be available at <a href="http://www.pap-thecoastcentre.org/">http://www.pap-thecoastcentre.org/</a>.
- 8. After the presentation a few questions were raised, particularly regarding the use of the funds collected through the selling of air emission permits in Croatia, and especially on how much the 95%, which are likely to be dedicated for adaptation measures, roughly amounted to? Other questions were related to what exactly would be funded. It was therefore agreed that the Ministry would provide the participants with a list of envisaged environmental investments, in due time. As soon as the information is provided, the PAP/RAC will forward it to the participants.

# Agenda item 4: Introduction to DIVA and methodology for the assessment of the costs of climate variability and change for the Croatian coast

9. Mr. Jochen Hinkel, from the Postdam Institute for Climate Impact Research, and representing the Global Climate Forum, presented the DIVA model (Dynamic & Interactive Vulnerability Assessment, www.diva-model.net). He gave an insight into the global assessment undertaken, worldwide experiences of the model's implementation, among others for the EU State of Environmental report (2010) and the latest projects where this method is being used.

# Agenda item 5: DIVA Database, data development, coastal segmentation and classification for Croatia

10. Mr. Athanasios Vafeidis, University of Kiel, had a presentation on the progress of work on downscaling of the DIVA model in Croatia. He presented the problems related to metadata availability and existence, and the fact that a lot of data were available, but without spatial references. Mr. Vafeidis particularly stressed the work done to achieve a specific segmentation of the Croatian coast, on which the model will be built to evaluate the socio-economic cost of climate change at the national and county levels. Thus, 1722 segments have been established for Croatia. The downscaling of the global DIVA model at the national level in Croatia can be summarised as follows:

Global DIVA	DIVA Croatia
- 13 segments,	- 1722 segments
- 2263 km of coastline,	- 5753 km (official length for Croatia)
- 1 km cell	- 90m cell (allow more realistic representation)

11. It was commented on the importance to integrate the cultural heritage when considering the downscaling of the model for the Croatian coast.

### Agenda item 6: Costs of climate variability and change for the Croatian coast - preliminary results

12. Mr. Hinkel continued with a presentation on the "scenario" aspects of the DIVA modelling, clarifying the use and the nature of the data and the scenarios considered for the socio-economic evaluation. In the preliminary phase, the DIVA modelling was mainly based on input data from Shared Socioeconomic Pathways (SSP) database, which contains data on population by age, sex, and education; urbanization; and economic development (GDP). In correlation, the International Institute for Applied Systems Analysis (IIASA) and the National Centre for Atmospheric Research (NCAR) existing scenarios were applied. He reminded the participants that those were the most widely recognised scenarios in the world, based on the latest work of the leading experts involved in the International Panel on Climate Change (IPCC). For example, special emphasis was placed on the use of Representative Concentration Pathways (RCP) as worldwide standards for sea-level rise. Mr. Hinkel's and Mr. Vafeidis' presentations will presently be available at <a href="http://www.pap-thecoastcentre.org/">http://www.pap-thecoastcentre.org/</a>.

#### Agenda item 7: Discussion

13. The local participants insisted on the specific evolution of the Croatian demography, and the general assumptions of DIVA were questioned. Namely, DIVA model is built around the population projections based on which the costs are calculated. In Croatia, as in other touristic Mediterranean countries, constructions and the related assets in coastal zone exceed largely the needs of the population. A lot is and will be built for tourism and secondary housing, whether for Croatians or for foreigners. Therefore, it was deemed essential to adapt the model in such a way as to base the projections on the existing and planned construction zones. In addition, it was proposed to make additional efforts to build a mapping more in coherence with the local assumptions. For example, more accurate administrative borders should be used. To this end, it was agreed to use more detailed data provided by the PAP/RAC.

The morning session was concluded with the line of thoughts to be further discussed:

- it is crucial to find economic factors/incentives to apply adaptation;
- mapping of cumulative costs of impacts could help to better communicate on the DIVA results.

# Agenda item 8: Presentation on the work done on the Economic and Social Assessment for the future Marine and Coastal Strategy

14. The afternoon session started with a change in the agenda to assist to a Skype presentation by Mr. Anil Markandya, the Scientific Director of BC3, the Basque Climate Change Research Centre, who could not be in Split for health reasons. During his presentation on the Economic and Social Assessment for future Marine and Coastal Strategy, he emphasised the importance of an integrated approach. Mr. Markandya determined differences in projections, although they didn't vary much to the year 2020, so he concluded that there shouldn't be a problem to adjust. He also stressed the importance of investment in oil and gas, since these will have a great influence on the economy. Indicators should be correlated with the investment needs. Mr. Markandya's will presently be available at <a href="http://www.pap-thecoastcentre.org/">http://www.pap-thecoastcentre.org/</a>.

15. Mr. Nenad Starc from the National Institute for Economy (Zagreb, Croatia) followed with the presentation of the approach to the socio-economic analysis of the Croatian coastal zone, the data used and the expected results, and as an example presented the analysis done for the Primorko-Goranska County. Mr. Starc's presentation will presently be available at <a href="http://www.pap-thecoastcentre.org/">http://www.pap-thecoastcentre.org/</a>

#### Agenda item 9: Discussion

- 16. The discussion was opened, and the main concern shown by the participants was on the future coastal investments:
  - What are the investments needs to achieve Global Environmental Standards?
  - What will be the direct and indirect impacts?
  - What will be the environmental performance of environmental investments?
  - How will the correlation between environmental performance and expenditure be recognised, i.e. how has the environment state improved owing to these investments?

In order to have comparable projections, it is envisaged to merge the local and national socioeconomic assessment methods around the IPCC scenarios. The limits, in terms of merging the methods, are immanent to the natural difference between long-term provision building and short-term planning, where inputs from the economic structure will vary in resolution.

# Agenda item 10: Croatian coast in GIS

- 17. The next presentation was by Mr. Zeljko Veseli, who introduced the participants to the work done by the Ministry of Construction and Physical Planning, by 2011, in terms of data collection and analysis. He gave a large overview of the national spatial data infrastructure developed and the related GIS tools available for Croatia and its coastal zones.
- 18. Ms. Suncana Habrun from the same office continued the presentation, giving more details on the online facilities developed for the public, a lot of which is done in the frame of the EU INSPIRE Directive. In fact, a geo-portal of physical plans is available, and in live Ms. Habrun presented the main functions. The spatial planning website accounts for more than two million hits a month, from 30000-odd IP addresses, showing a great interest from the public. Ms. Habrun's presentation will presently be available at <a href="http://www.pap-thecoastcentre.org/">http://www.pap-thecoastcentre.org/</a>. The geo-portal presented is available at <a href="https://ispu.mgipu.hr/">https://ispu.mgipu.hr/</a>.

#### Agenda item 11: Conclusion of the meeting

19. At the end of a meeting, a thorough discussion led to identifying further data needed for DIVA assessment finalisation, building synergies and optimising the presented outputs.

### **Tuesday, November 5**

# **Participation**

1. The second day of the meeting was attended by 15 participants, mostly from the same organisations and bodies as the day before. The *Complete List of participants (November 5) is attached as Annex III to this report.* 

# Agenda item 1: First draft results of the assessment of the costs of climate variability and change for the Šibenik-Knin County

2. The second day of the meeting started with a joint presentation by Mr. Nick Dale and Ms. Marta Pascual. They presented a large overview of the work done so far for the local socio-economic study, and gave detailed information on how the projections were calculated for Croatia, based on IIASA and national projections. More local data and analysis, it was said, would be included, for example regarding the issue of forest fires, which were identified during the first Climagine workshop and interviews carried out with the local stakeholders, as a main threat that goes along with the climate change on the coast of the Šibenik-Knin County. Mr. Dale's and Ms. Pascual's will presently be available at <a href="http://www.pap-thecoastcentre.org/">http://www.pap-thecoastcentre.org/</a>.

### Agenda item 2: Discussion

3. Again, the question of how to relate the short- and long-term vision was brought to the table, where a fine tuning between DIVA and the local assessment will be a key step. Therefore, inputs will have to be well defined and clear linkages of the coastal and marine analysis will be useful for a better coordination.

# Agenda item 3: Introducing ICZM Plan for the Šibenik-Knin County

4. Ms. Daria Povh-Skugor presented a thorough overview of the extensive work done so far on building an ICZM Plan for the Šibenik-Knin County. First she recalled why Croatia and the County were selected listing the key criteria: willingness of the authorities, existing spatial plan, existing data, highly populated coastline, low-lying river mouth and obvious coastal richness in terms of biodiversity and cultural heritage. Then Ms. Povh-Skugor reminded the participants of the objectives of the project, and placed the project phases in perspective with the framework of the ICZM Process¹ developed by the PAP/RAC. Currently the ClimVar project for the Šibenik-Knin County is in "Analysis & Future" step, after the "Establishment" phase was completed. She presented the ICZM Plan team and the involved local institutions and key partners. Ms. Povh-Skugor's presentation will presently be available at <a href="http://www.pap-thecoastcentre.org/">http://www.pap-thecoastcentre.org/</a>.

# Agenda item 4: Discussion

5. It was proposed by the PAP/RAC and accepted by the participants, that the rest of the day would be dedicated to agreeing on priorities, points and areas of integration, main conflicts on the Croatian coast and the pilot area. The discussions that followed, helped raise certain key points:

<sup>1</sup> http://www.papthecoastcentre.org/pdfs/ICZM%20Process.pdf

- use of secondary housing for tourism is a main issue as households in attractive locations are being turned into tourist accommodation facilities;
- drinking water resources are under pressure, and the consequences of the envisaged climate change are mostly negative;
- a high demand for aquaculture permits means higher demand for sea surface, the demand for marinas is high, and the leisure boats traffic is high;
- conflicts seem to crystallise around natural protected areas.
- 6. The main issues as identified above: (i) surface demand at sea, (ii) coastal household uses and (iii) development of coastal infrastructure will help develop relevant scenarios for the project. The scope of the key area of development was narrowed down, identifying agriculture and renewable energy development. The specific issue of fires was brought back into the discussion, and it was pointed out that there was room for physical interventions in fire prevention. The participants worked on building a common understanding, paying particular attention to the connections between the main threats, the scale of the issues and also the cumulative impacts.
- 7. DIVA is expected to help the information reach the people, giving a more realistic vision of what climate variability and change are bringing, especially where sea-level rise and coastal flooding are crucial threats. The global vision of the model, downscaled at the national level, will provide, in good coordination with the local assessment, valuable information to be used at the local level.

# Agenda item 5: Identifying further data needed for the assessment of the costs of climate variability and change for the Šibenik-Knin County

8. The participants decided to put on paper the main conclusions and propositions for further reflections. Thus, the table "overview and significance of key issues/conflicts" was drafted.

Issues/ conflicts	Current /future	Explain issue	Relevant sector/ infrastructu re	How does CVC affect the conflict?	What kind of future situations could be envisaged?	Data available	To what extent is this conflict relevant to the national scale?	Further analysis needed
Forest fires	Current	Damages	Forestry	Not clear		Current		Value of
	and		Agriculture	evidence		number /		damages
	future		Spatial Planning			burnt area		
Coastal		Degradati	Spatial	Loosing		Municipal		
development		on of the	planning	coastal		spatial		
VS		resources	Agriculture	space due		plans		
open coastal			Forestry	to SLR				
space			Tourism	Improving				
				tourist				
				distribution ??				
Coastal								
development								
VS								
increasing								
flood risks								

9. The table was filled in a lively discussion, and will be used as a tool for further investigation and analysis. Priorities will be further defined and the table will be completed before the end of the year by the ICZM Planning team of the project, using also the information gathered through the Climagine workshops.

# Agenda item 6: Round table: building synergies, cutting duplications, optimising outputs

10. A chrono-programme/to-do list was discussed and filled in by the partners as presented below.

# Agenda item 7: Closure of the meeting

11. 11. Ms. Daria Povh-Škugor thanked all the participants for the work done during the two days, and encouraged all to continue with the same energy and enthusiasm.

# Chrono-programme/to-do list agreed upon by the partners:

What	To be agreed	Deadline	Who	To whom
DIVA input for SKC	Exposed areas and elevation level     assets per sector		GCF	Metroeconomica Martina Baučić
ŠKC GIS analysis			Martina Baučić	Metroeconomica
Capital stock (existing per coastline segment and elevation level)	Empirical improved by Metroeconomica model		Metroeconomic a	GCF
Flooding information			Jure Margeta	GCF Metroeconomica
Harmonised GDP growth projections	IIASA Croatia	Mid December	Jochen Hinkel EIZ-EFST	Metroeconomica (Anil Markandya)
Harmonized populations projections	- Croatian Adriatic CBS (County physical plans projections)	End November	Metroeconomic a (Marta Pascual) EIZ-EFST (Nenad Starc)	GCF Metroeconomica ESA team
Data set required for ESA	Agreed upon and closed	End November	PAP/RAC Ministry of Environment	GCF Metroeconomica ESA team
ŠKC and ESA approaches	Compared and harmonized	End November	Metroeconomic a (Marta) EIZ- EFST GCF (Jochen)	GCF Metroeconomica ESA team
ESA methodology (economic vs. social assessment incl.)	Discussed and agreed upon	First week December	EIZ-EFST Metroeconomic	PAP/RAC
Existing and planned buildings areas	Possibility for DIVA	Mid December	PAP RAC	GCF Metroeconomica ESA team
Number of houses per settlement (last census)		Mid November	PAP RAC	GCF Metroeconomica ESA team
Time horizons Short time Long: 2050-2070	Economic / spatial planning projections – climate projections	Mid November	PAP RAC	
Future economy structure (sectoral projections)		Mid December	EIZ – EFST (expert judgement)	GCF Metroeconomica ESA team
Institutional framework. Initial research questions (infrastructure, tourism development,)		December	EIZ – EFST PAP RAC	
Scenarios – key conflicts and inputs (table)		December	PAP/RAC EIZ-EFST	GCF Metroeconomica
Scenario development		February	PAP/RAC	

# **Annex I - LIST OF PARTICIPANTS**

(4 November 2013)

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# Annex II - Agenda (Split, 4-5 November 2013)

Monday, Novemb	er 4
Venue: PAP/RAC	
09:00 – 09:10	Welcome address and opening of the expert meeting by Ms. Željka Škaričić, PAP/RAC Director
09:10 – 09:15	Welcome address by Ms. Nevia Kružić, NFP for MedPartnership and ClimVar project in Croatia
09:15 - 09:45	Project "Integration of Climatic Variability and Change into Coastal Plans and National ICZM Strategies" (Ms. Daria Povh Škugor, PAP/RAC Senior Programme Officer)
09:45 - 10:15	Croatian efforts to get prepared for the climate variability and change (Ms. Melita Zdilar, Ministry of Environmental and Nature Protection)
10:15 - 11:00	Introduction to DIVA and methodology for the assessment of the costs of climate variability and change for the Croatian coast (Mr. Jochen Hinkel, Postdam Institute for Climate Impact Research/Global Climate Forum) Discussion
11:00 - 11:45	DIVA Database: data development, coastal segmentation and classification for Croatia (Mr. Athanasios Vafeidis, Christian-Albrechts University Kiel) Discussion
12:00 - 12:30	Costs of climate variability and change for the Croatian coast - preliminary results (Mr. Jochen Hinkel, Postdam Institute for Climate Impact Research/Global Climate Forum) Discussion
12:30 - 13:00	Discussion
14:30 - 15:45	Presentation of the work done on the Economic and Social Assessment for future Marine and Coastal Strategy (Mr. Anil Markandya, Scientific Director of the BC3 Basque Centre for Climate Change and Mr. Nenad Starc, National Institute for Economy) Discussion
15:45 - 16:00	Croatian coast in GIS (Mr. Željko Veseli and Ms. Sunčana Habrun, National Institute for Physical Planning) Discussion
16:00 – 17:00	Identifying further data needed for DIVA assessment finalisation, building synergies and optimising the presented outputs

# Tuesday, November 5

Venue:	PAP	/RAC
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9:00 – 09:45	First draft results of the assessment of the costs of climate variability and change for the Šibenik - Knin County (Mr. Nick Dale and Ms. Marta Pascual)
09:45 – 10:15	Discussion
10:15-10:30	Introducing ICZM Plan for the Šibenik - Knin County (Ms. Daria Povh Škugor, PAP/RAC)
10:30 – 11:00	Discussion
11:15 – 13:00	Identifying further data needed for the assessment of the costs of climate variability and change for the Šibenik-Knin County
14:30 – 17:00	Round table: Building synergies, cutting duplications, optimising outputs.
17:00	Closure of the meeting

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(5 November 2013)

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