



Photo: Šibenik-IN

Local assessment of vulnerability to climate variability and change

AT A GLANCE

The “*Integration of climatic variability and change into national strategies to implement the ICZM Protocol in the Mediterranean*” project (“*ClimVar & ICZM*”) is a collective effort to promote the use of Integrated Coastal Zone Management (ICZM) in countries sharing the Mediterranean as an effective tool to deal with the impacts of climate variability and change in coastal zones, by mainstreaming them into the ICZM process. It was adopted in January 2012 and will be completed late in 2015.

The project is led by UNEP/MAP, within the framework of the MedPartnership project. Its executing partners are PAP/RAC, Plan Bleu/RAC and GWP-Med.

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

Total budget: 9.2 million USD.

2.2 million, USD: Global Environment

Facility 7 million USD: Participating

countries, executing agencies, and donors.

ABSTRACT

This assessment seeks to strengthen the understanding of impacts of climate variability and change (CVC) on coastal zones in the Mediterranean region. The method consists of assessing the impacts of CVC on different economic sectors and other areas of importance for the study area. In this case, impacts were assessed on a level of the coastal region Šibenik-Knin County in Croatia. The results showed that the sectors that contribute significantly to development of this county – tourism, agriculture, fisheries and aquaculture, and water management – are likely to be affected by CVC. The greatest potential impacts will be on coastal assets, which will affect primary residents, owners of secondary houses and tourism facilities in low-lying coastal zones.

Solid ground for resilient future coasts will be possible only by considering long-term CVC impacts in development plans. The results of such assessments feed into national and regional coastal plans, development plans, marine and coastal strategies, strategies for adaptation to climate change, and other strategic documents.

ACTIVITY DESCRIPTION

This study is part of the ClimVar & ICZM Project. It falls under the project objective to strengthen understanding of CVC impacts on coastal zones of the Mediterranean region by assessing environmental and socio-economic impacts in vulnerable sites. The results of the study were presented to key stakeholders which acknowledged the significance of its findings as a contribution to other planning efforts in the area.

THE EXPERIENCE

This assessment uses an integrated approach to study the economic impacts of CVC on coastal zones at the sub-national level. Its comprehensive approach covers many different sectors. This experience is valuable on broader level because the issues discussed here happen throughout the Mediterranean.



Photo: Daria Povh Škugor

Addressing the Issue/methodology

The assessment covered CVC impacts on economic sectors that are important for the Šibenik-Knin County, including tourism, agriculture, fisheries, water management, manufacturing, maritime transport and energy sector. The selection of the CVC issues covered in this assessment was based on priority climate change issues raised by stakeholders during the “*Climagine*” participatory process. The selection was further verified with the team of PAP/RAC experts.

Because of the range and complexity of CVC impacts across different sectors, there was no common methodology to estimate the effects of these impacts. For that reason, this study used a number of approaches to quantify and monetize those impacts.

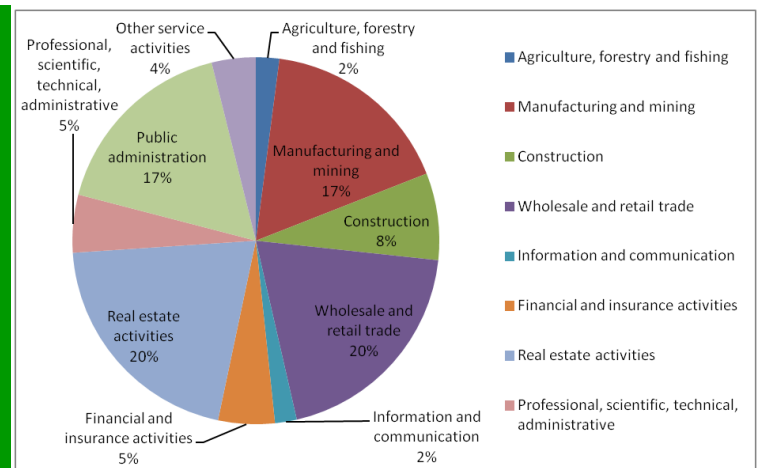
Parts of the assessment that focused on damages from sea-level rise and extreme water levels were also informed by the results of other PAP/RAC’s studies in the ClimVar & ICZM Project, specifically the effect of sea-level rise impacts on Croatia based on the Dynamic Integrated Vulnerability Assessment (DIVA) model, and a vulnerability analysis of coastal areas for Šibenik-Knin County.

In addition to assessing CVC impacts on different economic sectors, the study also covered impacts on forest fires, human health and cultural heritage.

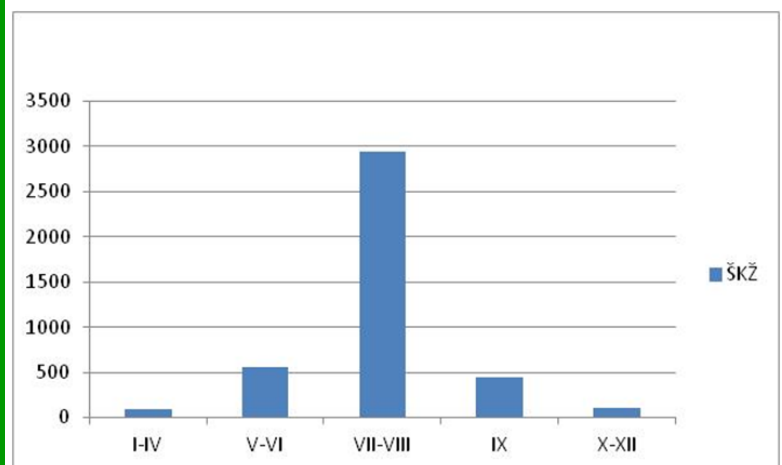
The conclusions of this assessment feed into the recommendations for prioritizing the issues within the coastal zone management plans and inform about the adaptation deficit in the region.

RESULTS

The greatest potential CVC impacts in the region will be reflected in damage to coastal assets. According to the DIVA study, Šibenik and Vodice are among ten floodplain areas with highest projected expenses from sea flood damages. Primary residents, owners of the secondary houses and tourism facilities located in the low-lying coastal zones will be particularly affected. These impacts will also include nautical tourism assets and protected sites. Agriculture yields are likely to be impacted by changing precipitation and temperature trends, and crop damage from more extreme weather. Fisheries may be affected by altered distribution of fish species and a greater number of invasive species, while aquaculture may be affected by increased salinity. Climate change will worsen the current issues with water supply, with increasing temperatures and reduced precipitation leading to decreased water availability in the summer months. In the winter, on the other hand, heavier precipitation, and flash floods will pose a risk to assets and infrastructure in urban areas and coastal zones. Impacts on other sectors, such as manufacturing, maritime transportation and the energy sector, are also likely, but more detailed studies are needed in these fields. Impacts on human health and cultural heritage sites and on the incidence of wild fires are also imminent.



Economic structure of ŠKC in 2011 (GVA)



Overnight stays in ŠKC in 000 for 2012

LESSONS LEARNED

Like many other Mediterranean coastal regions, this one has been faced with an economic decline that has resulted in unemployment and an uncertain future. Its plans are understandably focusing on ways to create sustainable development based on its comparative advantages in sectors such as tourism, agriculture, fisheries and aquaculture, and possibly energy.

Although the extent and timing of its impacts are uncertain, there are strong evidence that the climate will become warmer, with longer and possibly more intense floods and droughts. Any development plan therefore must bear in mind the need to make the economic structure of the county more resilient to climate variability and change.

Since the greatest economic impacts will be on coastal assets, particularly housing and tourism facilities, these assets must be addressed in two ways. First, protection should be provided for those locations with high-value assets. Second, plans for future development and land-use plans should take into account the increased risk of damage from storm surges and sea-level rise. For example, the established setback zones should be adjustable by taking into account the latest CVC projections and related vulnerability assessments.

As for economic sectors, more detailed estimates are needed on the local level because of the complex nature of CVC impacts.

IMPACTS

The selection of CVC issues to be covered in this report was strongly influenced by the opinions of local stakeholders involved in “*Clímagine*” participatory process from the very beginning. The outputs were presented and discussed during later “*Clímagine*” workshops. These outputs have been introduced into coastal plan of Šibenik-Knin County, and will serve as a basis for the county’s spatial plan and other relevant plans and strategies. In addition, the conclusions and recommendations will inform the preparation of the Marine and Coastal Strategy of Croatia. The nature of the assessment might also serve as example to other Mediterranean countries that are likely to experience similar CVC impacts to develop their own coastal plans and strategies.

In addition, the outputs of this assessment will be provided as inputs to a National strategy for adaptation to climate change and a National strategy for regional development.



“*Clímagine*” participatory meeting
Photo: Daria Povh Škugor

REFERENCES

Priority Actions Programme/Regional Activity Centre
(PAP/RAC)

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KEYWORDS

methodology; sector-based assessment; climate change impacts; adaptation; impacts on economy

EXECUTING PARTNER

PAP/RAC is established in 1977 in Split, Croatia, as a part of the Mediterranean Action Plan (MAP) of the United Nations Environment Programme (UNEP). PAP/RAC's mandate is to provide support to Mediterranean countries in the implementation of the Barcelona Convention and its Protocols, and in particular of the Protocol on Integrated Coastal Zone Management. PAP/RAC is oriented towards carrying out of the activities contributing to sustainable development of coastal zones and strengthening capacities for their implementation. Thereby, it co-operates with the national, regional and local authorities.



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Strategic Partnership for the Mediterranean Sea Large Marine Ecosystem

Together for the Mediterranean Sea

MedPartnership



Executing partners: FAO, UNESCO/IHP, UNIDO, GWP-Med, MIO-ECSDE, WWF MedPO, UNEP/MAP’s MEDPOL programme and regional activity centres (CP/RAC, SPA/RAC and PAP/RAC).

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

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