

CLIMAGINE - CO-BUILDING THE COAST OF THE FUTURE

Mediterranean coastlines are places of strategic importance, which are home to a rich diversity of ecosystems. However, they also face numerous pressures. For over twenty years, the International Panel on Climate Change (IPCC) has warned that these fragile zones could be severely impacted by climate change. Integrated Coastal Zone Management (ICZM) is recognised as the best way to promote the sustainable development of these vulnerable spaces and it now fully incorporates this issue. However, the participatory nature of ICZM means that it faces a major challenge in order to give stakeholders the tools they need to coplan their territory while taking into account the impacts of climate change. A new method has been developed to meet this need, known as *Climagine*.

Context and status of coastal management plans

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Plan Bleu In 1975, sixteen Mediterranean countries and the European Community adopted the Mediterranean Action Plan (MAP), the first Regional Seas Programme under the United Nations Environment Programme (UNEP). In 1976, these same countries adopted the Barcelona Convention, the legal basis for protection of the Mediterranean Sea. From 1976 to 2013, this legal framework was expanded with seven protocols and their amendments on specific aspects of environmental conservation and protection¹. These Protocols are implemented through seven Regional Activity Centres coordinated by UN Environment/ MAP. The Protocol on Integrated Coastal Zone Management in the Mediterranean (ICZM Protocol) is the main legal instrument for implementing this approach in the Mediterranean.

It came into force in 2011 and was the first international treaty on coastal management. Article 18 of the Protocol asks each Party to develop a "national strategy for integrated coastal zone management and coastal implementation plans and programmes consistent with the common regional framework". To achieve this, they can call on the support of the Regional Activity Centre/ Priority Actions Programme (RAC/PAP), which has been tasked with helping them to implement the obligations set out in this document. The Protocol emphasises the need to create these strategic documents by using a participatory process that sufficiently takes into account the interests of all stakeholders (Article 14). For the "ClimVar and ICZM" project (2012 - 2015), financed by the Global Environment Facility, the Regional Activity Centre/ Plan Bleu developed a participatory method, Climagine, which was tested during the development of the coastal plan for Šibenik-Knin County (Croatia), co-managed by the RAC/PAP. Both activities were implemented in an integrated manner (Figure 1), with pooled resources and results.

1 <u>http://web.unep.org/unepmap</u>

From "Imagine" to "Climagine"

In the early 2000s, Plan Bleu developed a method called *Imagine*² to ensure the participation of stakeholders in preparing the Coastal Area Management Programmes (CAMPs) implemented by the MAP. This method encourages players to develop foresight and prospective discussion for the future of their territory. To this end, they need to (i) develop a coastal vision to aspire to, (ii) determine which actions could achieve this, and (iii) develop a set of indicators to monitor progress towards sustainability. *Imagine* has four main phases (*figure 2*):

1. Discuss and understand the existing situation by representing it using a rich picture. The aspects considered include the situations, links, ties, influences and other causal relationships in the territory, as perceived by the stakeholders. This phase determines the main challenges in the zone in question.

A rich picture is a schematic representation of complex environmental, social or economic systems, created jointly by a group of players during a workshop, with the help of drawings, diagrams or symbols. A rich picture helps the group explore a given situation in depth and understand the multiple dimensions of complex issues. Once the picture has been created, participants are asked to describe it to share their perspectives and express their ideas in written form. The results are used to establish priority actions.

2. Identify sustainability indicators for major issues and produce the associated **bands of equilibrium**. It is important to select SMART indicators (Specific, Measurable, Achievable, Realistic and Time-bound). These are selected by stakeholders with the help of experts specialised in the priority themes identified during the first phase. These indicators are used to measure sustainable development progress.

2 Imagine method user guide: <u>http://planbleu.org/sites/default/files/</u> publications/cahiers3 imagine_uk_0.pdf A **band of equilibrium** is determined by identifying a range defined as sustainable between the minimum and maximum thresholds for each indicator, regardless of their value at the time of measurement. This range must be defined during the workshops as the participating experts may have different opinions that they can discuss. In many cases, this exercise is not only based on scientific knowledge but also on the perception that local players have of their territory. The amoeba approach used afterwards will show all indicators at the same time, with their respective thresholds and bands of equilibrium.

3. Model and explore the future of the coastal zone using scenarios that show the importance of coastal issues, particularly conflicts associated with the use of natural resources. The scenarios provide an essential basis for long-term decision-making for development and environmental protection models. This phase also includes the production of an **amoeba** diagram to show the band of equilibrium for each indicator. This radar chart shows all indicators at the same time to provide a full picture of the situation.

The amoeba approach was developed in 1991 by Ten Brink. Its acronym is Dutch for "general method for ecosystem description and assessment". It was retained in other languages due to the similarities between the chart that is produced and an amoeba. For Climagine, an initial amoeba diagram is produced, showing all indicators at the same time using points that show their known value at the date of the workshop. The points are then connected together to create a polygon that can be compared with the band of equilibrium. After this, creating an amoeba diagram of a past situation can be used to show changing trends. Scenarios can be developed based on the two amoeba diagrams and a third amoeba diagram can be produced with projections by players concerning the future of their territory.



Figure 1: Coastal plan development process and *Climagine*

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Source : Plan Bleu, 2006

4. Make suggestions and act by developing an action plan for the sustainable development of the territory, including a progress monitoring system that uses indicators and their bands of equilibrium.

The approach was tested and fine-tuned when implemented in the CAMPs for Malta (2000 - 2002), Lebanon (2002 -2003), Algeria (2003 - 2004), Slovenia (2005) and Cyprus (2007). *Imagine* capitalises on local knowledge, recognises its complementarity with scientific knowledge, and increases the efficiency and legitimacy of decisions and recommendations made within CAMPs. In 2013, a new key issue appeared for all coastal management plans: climate change. This new component required revision of the initial participatory approach (Imagine), to develop *Climagine*. The "ClimVar and ICZM" project was used to develop a coastal plan for Šibenik-Knin County (SKC) and led to strategic discussion in Tunisia for the Kerkennah Islands. It was also the perfect opportunity to develop this method.

Preparing Climagine workshops

In order to prepare the national workshops in Croatia and Tunisia, Plan Bleu organised a meeting of experts in 2013 to work on the *Climagine* method. The following issues were discussed.

Relevant local expertise

The *Imagine* method is based on the expertise of local players to identify and prioritise key issues. To do this, the stakeholders consider the future demographic, economic, social and environmental characteristics of the territory, based on the current situation, in order to understand the players and challenges in the area in question. Consideration of the theme of climate change remains complex in these territorial discussions. It requires players to think beyond the present day and not only develop trend and provisional scenarios at the risk of missing certain challenges.

They are encouraged to work on weak signals, disruptions and emerging changes. For example, the county currently has abundant water resources, but changes to rainfall patterns as a result of climate change could threaten supplies in the near future. In this specific case, the problem is that this issue might not be taken into account unless external stakeholders inform policymakers of the situation. Furthermore, in the context of the Mediterranean, it is likely that these policymakers do not have the necessary knowledge in this field to fully understand the role they could play in their territory. Providing them with information on the multiple consequences of climate change is therefore a priority.

Managing uncertainty in foresight planning exercises

One of the major challenges in sharing information on climate change is uncertainty, particularly with regard to the intensity and variation of climate factors. This global uncertainty is exacerbated further when applied to smaller scales. However, the IPCC reports highlight a number of major climate change trends in the Mediterranean (rise in mean annual temperature and intensity of extreme events, and increasing scarcity of water resources, etc.), which can be used to anticipate problems in the Mediterranean in the near future in order to incorporate them into a management plan. When developing scenarios, the uncertainty surrounding the impacts of climate change is combined with the uncertainty associated with economic, demographic, social and environmental changes. The foresight exercise proposed by the *Climagine* method capitalises on the results of scientific research to clarify the interactions between complex local issues.

What time scale for the scenarios?

The time scale of scenarios is an important question. By taking into account the issue of climate change within an ICZM approach, the timeframe can be in decades or centuries depending on the themes covered. Climate change is traditionally represented by IPCC using scenarios and mapping. Two options were available for the *Climagine* exercise in Šibenik-Knin County: combining the IPCC scenarios with local environmental and socioeconomic factors, or simplifying the exercise by only considering the most probable IPCC scenario.

Climagine was therefore designed to give players tools to consider all these aspects, particularly via a component to educate on the impacts of variability and climate change.

Implementation of *Climagine* in Šibenik-Knin County (SKC)

Climagine was implemented in SKC using the process, outcomes and resources used to draw up the coastal plan. During each workshop, experts informed participants of the potential impacts of climate change on the coastal zones and county as a whole, and of the trends and threats facing the county's natural resources.



Source : RAC/PAP. 2013

SKC and its main challenges

SKC is in a central location along the Croatian coast, in the Dalmatia region. Its coastline is renowned for its extraordinary diversity. The county has two natural parks: Kornati, a marine park, and Krka, located on the banks of the river of the same name. The county's urban, demographic and socio-economic characteristics are similar to the rest of the Croatian coastline: over 70% of the county's residents live in urban areas along the coast where most economic activities are also concentrated, particularly tourism, which has witnessed considerable growth since the 2000s. This growth coincides with a significant increase in the number of second homes, to the detriment of primary residences, which have dropped from 67% to 54% in ten years.

Kornati National Park

Despite this, Šibenik-Knin remains one of the Croatian counties with the lowest development indexes. This zone is considered to be one of the most vulnerable to climate change along the Croatian coast. Many towns and cities at low altitude could be increasingly exposed to flooding risks if the sea level increased by 0.50 m. Some of them have already been affected by these extreme events. Many local economic activities, such as mariculture, agriculture and tourism, could be significantly impacted by climate change. It could also have serious consequences on water resources in the region, which are currently still abundant. These impacts combined with excessive use of water resources during the peak tourist season, could impact the minimum environmental flow of the Krka River.

In addition to these specific geographical aspects, it is also important to consider the cultural characteristics of Croatian society in order to properly understand the challenges of the participatory process. It is often assumed that players in a territory want to be involved in management, but this is not the case in Croatia where there is a general reluctance to take part in public life in any form. This can be explained by the systematic rejection of anything reminiscent of the country's socialist past, from all forms of citizens' associations to planning³. In this context, launching a largescale participatory process was particularly ambitious, particularly as it was based on climate change, an issue about which the Croatian population knows little⁴.

Climagine experience in SKC

First milestones

Initial contact was made with the territory's Environment and Land Planning Department in January 2013 when RAC/ PAP started preparing the coastal plan. The county's area management plan required the creation of special plans for zones of special interest, such as the coastal zone, which provided the legal framework for this activity.

Climagine was presented to the county authorities as a parallel activity that would incorporate local knowledge into the coastal plan and help local players take ownership of the process, thereby increasing the probability of it being implemented effectively.

³ Gulin Zrni Valentina, 2013, *ll n'y a pas d'alternative. Zagreb et les changements urbains au tournant du siècle*, Ethnologie française, Vol. 43, p. 201-215. DOI : 10.3917/ethn.132.0201

⁴ UNDP, 2008, Good climate for a change.

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The first step in the *Climagine* workshops was the mapping and analysis of local players. Around one hundred key players in coastal zone management were identified according to three criteria:

- their role (real or potential) in county management;
- level of pressure placed on coastal resources by their activity;
- level of dependence of their activity on coastal resources.

These players were from the public sector, academic sector, private sector and civil society. The expert responsible for coordinating the *Climagine* process worked with RAC/PAP and Plan Bleu to prepare the initial working documents to attract the interest of stakeholders, particularly focusing on the importance of continuous local participation for developing the plan.

Workshop organisation and programme

Four *Climagine* workshops were jointly organised by Šibenik-Knin County, Plan Bleu and the RAC/PAP between April 2013 and April 2015.

The first three workshops were organised in two sessions: the first session focused on presentations on the projected impacts of climate change, as identified by experts while developing the coastal plan, whereas the second followed the traditional *Imagine* programme.

• During the first workshop, the production of rich pictures was especially useful for creating momentum in the participatory process within the context of Croatia's extremely hierarchical society, where people can be reluctant to speak out. The participants were first asked to perform a diagnostic assessment to represent the existing situation before thinking about how climate change could influence it. After this exercise, the local team found that the presentations had made a significant impact on those listening as their conclusions were reflected in the priority issues chosen by participants. For example, water resources were considered a crucial issue, despite the fact that quantities are currently in sufficient supply. This exercise focused on climate change also revealed other major issues such as the increased frequency of forest and wildfires. The main limitation of the exercise was the uncertainty associated with the projections put forward by stakeholders as their knowledge of the impacts of climate change at a local level was limited.

• The second workshop was an opportunity for participants to learn more about climate change at a global level, the links between climate change and energy, and adaptation efforts made by Croatia. They also covered the outcomes of the first phase of the coastal plan, particularly local impacts of variability and climate change (e.g. rising sea levels), analysis of fire risks, and the level and quality of groundwater in the county. During this workshop, 27 sustainability indicators were selected, demonstrating the cross-sector approach to considering climate change when assessing the sustainability of the zone.

The local team adopted the following indicators which best illustrate the focus on this issue: frequency of storms and flooding; rising sea levels and the impact on sewer systems and drinking water infrastructure, and the number of people developing health problems associated with heat waves. However, a lack of local data to complete these indicators meant that only two of them could be included in the final list. Additional work on this theme was therefore required during the third workshop.

• During the third workshop, the diagnostic analysis of the coastal plan was presented. It focused on potential water resource management methods and the resilience of structures and infrastructure to climate change. The participants then selected 13 new measurable indicators. The lack of data was a significant limitation in the exercise as the final list of indicators is no different from those in other ICZM projects, despite the initial list being significantly different due to the importance given to the impacts of climate change.

Table 1: List of Climagine indicators for SKC

Dimensions	Indicator selected
Water	1. Mean annual water consumption (in %)
	2. Mean water consumption in August (in %)
Sea	3. Mean connection rate to wastewater treatment facilities
Fires	4. Annual surface burned (ha)
Energy	5. Ratio of renewable energy to total energy consumption
Physical space	6. Ratio of primary residences compared to the total number of dwellings (%)
	7. Population density in Šibenik-Knin County compared to density outside the county
Society	8. Ratio of the total active population employed in the county and outside the county
	9. Proportion of the population aged over 15 with a middle school / high school / university education in the county / Croatia
Environmental protection	10. Percentage of marine protected areas compared to the total surface area of the sea covered by the ICZM Protocol (%)
	 Percentage of protected land areas compared to the county's total land area (%)
Waste	12. Kg per county resident
	13. Kg per resident inside and outside the coastal zone
Land	14. Irrigated land for agriculture (ha)
	15. Land used for organic farming (ha)



Figure 4: Plan area's vulnerability map as presented to stakeholders

Source: Coastal plan, 2015

During this workshop, diagnostic assessment of vulnerability produced under the coastal plan was presented (*Figure 4*). It can be used to both assess the vulnerability of a territory to the risks caused by climate change, particularly by studying its exposure and sensitivity, and rank the level of vulnerability with regard to the extent of the consequences and the probability of impacts occurring. The workshop created an opportunity for dialogue between the experts' diagnostic assessment and stakeholders benefitting from the initiative.

• The fourth workshop started with presentations on the assessment of coastal flooding impacts for Croatia and potential economic impacts in SKC. The draft coastal plan was then presented, which launched discussion on the future of the zone in question. Amoeba diagrams (*Figure 5*) were created on the basis of the indicators defined during workshop 3. The timeframe for the foresight exercise was set at 2030, which is closer to the standard ICZM timeframe than the timeframe for climate change (2100), which the participants considered as too far in the future. One of the main factors contributing to the success of the workshops was therefore the interest demonstrated by the county's institutions in the coastal plan, for which they have high expectations. Their representatives repeatedly mentioned how difficult it is to manage the territory while facing constant pressure from investors looking to purchase land in the most attractive yet also the most threatened coastal zones. By ranking the priorities, the coastal plan is nevertheless a solid basis for the county administration to make decisions for allocating land use permits.

It is important to highlight the key role of the public authorities in organising and holding the workshops. Political support in this kind of process is one of the key ingredients for success.



Figure 5: Amoebas drawn for the years 2001, 2011 et 2030

Source : Plan Bleu, 2015

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Climagine and the Kerkennah Islands under the "ClimVar and ICZM" project



© APAL, Kerkennah

The *Climagine* method was tested in another pilot zone in the Kerkennah archipelago in Tunisia. This ecologically and culturally rich zone in the Gulf of Gabès is considered to be very vulnerable to climate change. The purpose of this activity was to analyse the roles played by the coastal ecosystems and to assess the services they provide in mitigating the impacts associated with rising sea levels (flooding, erosion, saltwater intrusion, etc.).

This activity was implemented in a post-revolution social and political context and was widely influenced by two fundamental aspects. Firstly, real democratisation of public environmental policies created better awareness, letting people speak out and increasing the level of demands by players in favour of sustainable development. Secondly, this activity took place in a context where the legal and

operational applications of decentralisation were still being defined. *Climagine* consultations therefore needed to be organised in order to capitalise on the budding awareness of the population and local players about the future of their coastal territory and to build the appropriate bridges between the central and local levels. The workshops were therefore organised with alternating scientific expertise and local expertise, with meetings organised in the capital, Tunis, and on the Kerkennah archipelago.

The first workshop was held in Tunis with the participation of the various central ministries, representatives of experts, local policymakers, economic sectors on the island and local NGOS. The workshop produced a shared understanding of the Kerkennah Islands' social and environmental ecosystem (pressures, priority issues, ecosystems and vulnerable zones to consider in the study).

The second workshop was organised on the island and drew on local expertise and knowledge, primarily bringing together local and regional stakeholders. The workshop therefore helped the local authorities to truly take ownership of the process.

Representatives from central bodies also took part in the workshop and discussions identified the services provided by the main ecosystems on which the island's activities and subsistence depend, and the threats they are facing. They also identified solutions to ensure the long-term survival of these services in a context of climate change.

The third workshop took place in two sessions, with the first in Kerkennah and the second in Tunis. Both sessions had a similar agenda, with the aim of presenting the outcomes of the process and drawing up consensus-driven recommendations supported by local and national stakeholders



© APAL, Kerkennah

In the end, although the lack of data on risks, vulnerability and exposure were a barrier to selecting indicators and creating scenarios, the high flexibility of the initiative led to:

• an effective participatory process involving the municipality of Kerkennah, the Tunisian Ministry of Environment and Sustainable Development, the Tunisian Coastal Protection and Planning Agency (APAL), the Tunisian Ministry of Agriculture, Water Resources and Fisheries, trade organisations, civil society, academics, other local and national stakeholders, and international institutions (such as UN Environment/GRID),

- eleven recommendations for strategic action⁵ for local elected officials to improve the resilience of coastal ecosystems,
- and the development of a data exchange platforms⁶.

5 <u>http://planbleu.org/sites/default/files/publications/medpartnership_kerkennah_full_report_fr.pdf</u>
6 <u>http://kerkennah.grid.unep.ch/</u>

Limited representation of the private sector

In addition to the stakeholders traditionally involved in ICZM processes (representatives of national government, subnational and local administrations, research institutes and universities, private sector, NGOs, etc.), special efforts were made to invite representatives from the private sector, banks and insurance companies to participate in the process. As Ban Ki-Moon said in a UN meeting in April 2016⁷, insurance companies have a key role to play in this field. Beyond just providing compensation, insurance companies need to position themselves as leaders in prevention and warning systems in order to reduce the risks of natural disasters, or alternatively limit the damage they cause.

Despite the local team's efforts to contact these players (telephone calls and direct interviews), they declined to attend the *Climagine* workshops.

Promote consultation through individual interviews

In addition to *Climagine* workshops, eighteen individual interviews were organised by the local team so that players could speak more freely and in order to listen to the opinions and suggestions of stakeholders unable to attend the workshops. These interviews identified other issues that were not mentioned during the workshops and maintained the momentum of the participatory process between workshops.

Evaluation and future of *Climagine*

This first experience of incorporating climate change into an ICZM process was positive as the main objectives of *Climagine* were achieved, despite the uncertainties often surrounding pilot experiments. *Climagine* led to the creation of measurable indicators and the development of scenarios that form the basis of the Šibenik-Knin County coastal plan.

⁷ Meeting of 13 April 2016 on climate change resilience, bringing together a number of global insurance players, organised by the UN.

A number of other positive outcomes can be listed:

Essential knowledge transfer

The workshops considerably increased the knowledge of stakeholders about planning and the impacts of climate change on their territory. The analysis carried out as part of the coastal plan provided players with information on the potential economic impacts of coastal flooding at a local level, and the discussions held during Climagine helped the county administration to set ambitious targets for climate change adaptation, while also taking into account the importance of reducing greenhouse gas emissions. The key to success is no doubt optimal integration between the coastal plan development process and the Climagine workshops.

One step closer to good governance

The workshops were an opportunity for stakeholders to familiarise themselves with participatory methods that got them talking using fun exercises such as the creation of rich pictures. The individual interviews helped improve knowledge by capitalising on the opinions of the various people contacted outside of the workshops.

It was a major advantage to have a local facilitator with a sound understanding of climate change to moderate the workshops. In-depth knowledge of the local context meant that the expert was able to highlight the extent of potential impacts on local economic activities. For example, selecting extreme events (fires, coastal flooding, other flooding) that have occurred in the region is an effective way of raising the awareness of local players. This Croatian native was able to adapt his messages as closely as possible to the themes in which players had a direct interest and upon which they could act (urban planning, water management, etc.).

For sustained and optimal application of the method, it is important to reiterate the two major barriers encountered and a few suggestions for improvement:

 Identification of indicators proved to be a complex step. In Kerkennah, this step had to be replaced by another: identification of threats to coastal ecosystems and solutions to overcome them. In Šibenik-Knin, this same step required the support of the team of experts. The main obstacles were the inability to access reliable data and to check the quality of available data. It is therefore vital to define a rigorous framework for validating the quality of data or facilitating their development.

 It also proved difficult to bring the banking and insurance sectors and private players into the consultation process. For banks, one of the reasons is that most of those in the region are only subsidiaries whose head office is located overseas. Their interest in local risks and challenges therefore seems limited. For the private sector, only three business representatives attended the workshops (shipbuilding, civil construction and marine innovation centre). The interviews carried out with these players revealed their scepticism with regard to their room for manoeuvre for reducing the impacts of climate change, which explains their absence. Furthermore, the duration of the workshops (full day) in the middle of the week did not seem to encourage their participation. It is therefore recommended that a strategy to involve these players be developed.

Towards a practitioner guide

These observations show the need to develop a guide to support the local team implementing the Climagine approach. This guide would set clearer guidelines for the approach in order to compensate for the barriers encountered in these two pilot experiments. It would therefore be possible to disseminate the method and make it easier to reproduce for the development future ICZM plans and strategies.

The Climagine participatory method has proven itself to be a particularly useful tool for developing a coastal plan. In return, the coastal plan gave Climagine a recognised framework for bringing together and effectively raising the awareness of local players.

Finally, incorporating the outcomes of Climagine into a coastal plan gives them a regulatory scope as this document will need to be taken into consideration when drawing up future legally-binding documents. It is therefore a win-win partnership for developing planning documents to help Mediterranean coastlines achieve greater sustainability and strengthen resilience.

Bibliography

- Touzi, S. et Ben Zakour, M. (2015). Rapport de synthèse sur l'approche Climagine.
- UNEP/MAP/PAP-RAC (2015). Coastal Plan for the Sibenik-Knin County, a Road to Resilience.
- UNEP/MAP/Plan Bleu (2006). A practitioner's guide to « Imagine ». The systemic and prospective sustainability analysis.



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