NEW ACTION: An integrated approach towards the climate-proofing of maritime spatial planning in the Italian Northern Adriatic Sea

Short description

This new action enabled the development of an integrated methodological approach for the climate-proofing of the maritime spatial plan of the Italian Northern Adriatic Sea. The approach was designed according to a typical adaptation policy cycle, including interlinked steps: (i) setting the ground for climate change adaptation, (ii) assessing climate change risks and vulnerability, (iii) identifying and assessing possible adaptation options, (iv) implementing the identified adaptation measures, and (v) monitoring and evaluating the results of the adaptation process. The design of this new action is based on the analysis of the available scientific evidence on regional climate change projections for the Northern Adriatic Sea, climate change impacts on the marine environment and maritime activities of this area, and available adaptation options. The approach to climate change adaptation is also designed to incorporate the knowledge from stakeholders representing different maritime sectors directly experiencing the impacts of climate change, environmental protection needs, and the perspective of civil society. Though specifically tailored to the Northern Adriatic area, the approach is based on a general framework that can be applied to the entire Italian MSP area.
This fact sheet summarises the main elements of the developed approach, which is described in more detail in a specific technical report.

Project partner(s) responsible for the preparation of the new action

CNR-ISMAR (including Thetis as sub-contractor), CORILA, IUAV

Action typology

(iii) Process-related practice (development of an approach to improve climate-proofing of MSP)
(v) Analysis
(i) Measure

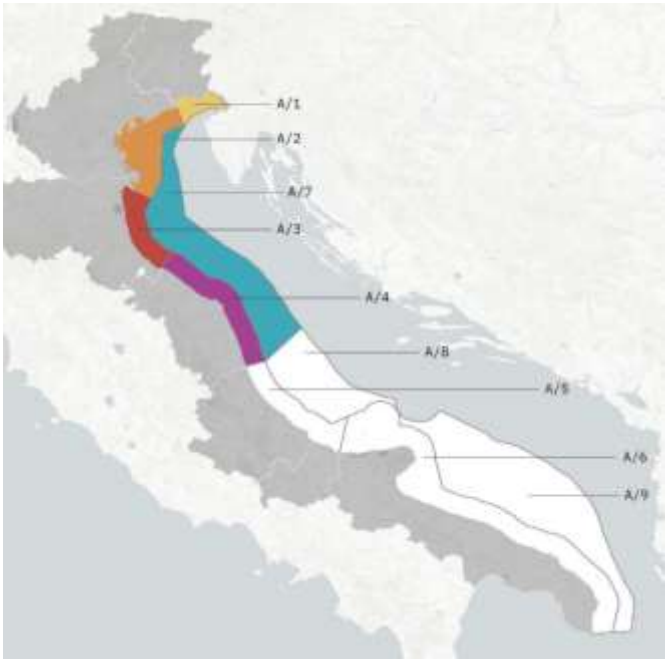
Topics addressed

Primary topic:
B. Climate change adaptation
B.2.1 Identification of spatial and non-spatial measures with the aim of addressing the impacts from climate change
B.3 Anticipation of climate-change related effects

Related topics:
C - Sustainable seafood production
D. Biodiversity and ecosystem protection and restoration

Geographical scope

The geographic scope of the new action is the Northern Adriatic Sea (NAS), as defined by 5 subareas of the proposal of the Italian MSP plan for the Adriatic maritime area (A/1, A/2, A/3, A/4, and A/7). The NAS includes the territorial marine waters (within 12 nautical miles from the coastal reference line) facing 4 different Italian regions (Friuli Venezia Giulia, Veneto, Emilia Romagna, and Marche) and the offshore area extending from the delimitation of the territorial marine waters over the continental platform, until the median line that marks the agreed boundary with Croatian and Slovenian waters.



Sectors/Activity involved

Multisector, with particular reference to some key NAS sectors mostly affected by climate change, i.e. fishing, aquaculture, coastal and maritime tourism, nature protection and restoration, and coastal protection.

How does the new action support the Green Deal in MSP

Although climate change adaptation is already somehow reflected in the current version of the Italian (and Adriatic) maritime spatial plans, and several objectives and measures dealing with climate change adaptation are included in these planning documents, the full integration between climate change adaptation and maritime spatial planning is still limited. This is due to the well-known complexity of developing climate-smart MSP plans, and related challenges, e.g. dealing with the: formulation of climate change scenarios and projections at the regional and local scale, operational management of different forms of uncertainties (e.g. those linked to climate change projections, the knowledge on climate change impacts on different targets, their cumulative effects considering also impacts causes by other human pressures, etc.), identification of most exposed and vulnerable areas, and identification, implementation and monitoring of targeted spatial measures. The limited operationalization of adaptation measures for some maritime sectors (e.g. fisheries, or aquaculture) also plays a role in limiting the integration of climate change adaptation into MSP plans.

The new action addresses the need to formulate common evidence-based knowledge about how climate change could impact maritime sectors and activities (including environmental protection) of the Northern Adriatic Sea. It also addresses the way synergies between MSP and adaptation planning can be better developed to make MSP plans climate-proof. The proposed framework provides an analysis of potential adaptation options relevant to MSP, i.e. options having a spatial dimension or being related to regulations and governance aspects that can enable the MSP implementation in a climate change perspective. Examples of identified adaptation options include diversification of fisheries and aquaculture, marine and coastal eco-tourism, optimization of aquaculture zoning and siting, establishment of marine protected areas and identification of climate refugia, environmental restoration of coastal and marine

NEW ACTION: An integrated approach towards the climate-proofing of maritime spatial planning in the Italian Northern Adriatic Sea

ecosystems, beach and shoreface nourishment, increased resilience of port infrastructure, etc.

Criteria for selecting adaptation options have been also identified, including avoiding maladaptation options, preferring nature-based solutions, maximizing synergies with climate change mitigation, and considering the effects of adaptation in terms of social justice and fair transition.

Governance context

The four regional authorities included in the NAS (Friuli Venezia Giulia, Veneto, Emilia Romagna, and Marche Regions) have a primary role in developing this action. These regions, like the other Italian coastal regions, have already actively contributed to the development of the MSP plan for the NAS, being members of the Technical Committee responsible for the elaboration of the Italian MSP Plans. To bridge MSP with climate change adaptation planning, regional departments or directorates other than those directly dealing with MSP are expected to be involved, in particular those responsible for the development and implementation of regional climate change adaptation strategies and pans. Specific working groups and operational structures established at the regional level shall be also involved, e.g. the "Regional Forum for Climate Change" and the "Regional Observatory for Climate Change" set in place in the Emilia Romagna region. Regional Agencies for Environmental Protection (ARPA) also have an important role as providers of data about regional climate trends and climate change projections.

Important actors at the national level include the Ministry of Infrastructure and Transport (i.e. the MSP competent authority), the Ministry of the Environment and Energy Security (for its role in MSFD implementation and biodiversity conservation, with clear linkages to climate change adaptation as well as its direct responsibility on the development of the PNACC, the national climate change adaptation plan), other Ministries with competences on marine sectors (for the related implication in terms of climate change adaptation.

The proposed approach foresees the creation of a core team involving the above actors to support the climate-proofing of MSP plans and sustain the adaptation process in the long term.

Other stakeholders to be involved in the new action

The core team described in the Governance Context should be advised by experts from the scientific community, including therefore experts on climate change aspects (climate change monitoring, climate projections, impact analysis, adaptation policy, adaptation measures, etc). The involvement of stakeholders representing the maritime sectors and activities expected to be particularly exposed to the effects of climate change is equally important. Within the developed framework, the dialogue with stakeholders is considered a crosscutting activity for all the steps of the adaptation policy cycle. It is particularly important to support the assessment of risks and vulnerabilities (step 2) and the identification and evaluation of possible adaptation options (step 3), to ensure that the adaptation process responds to the actual needs of stakeholders and is feasible, effective, and respectful of social justice and fair transition principles and objectives.

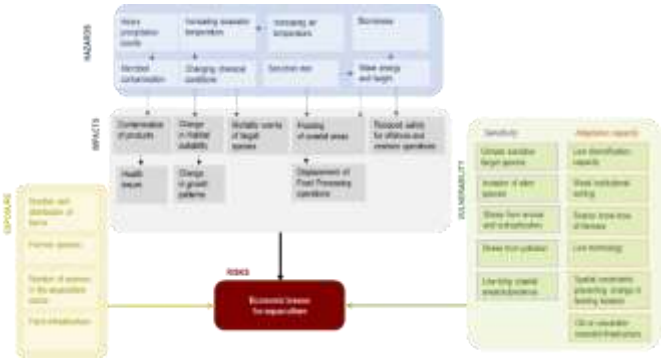
Stakeholder engagement for climate change adaptation is not considered a separate process, but a component of the overall stakeholders' engagement organized as part of MSP. Nonetheless, the proposed approach considers relevant the organization of specific stakeholder events (workshops, surveys, training events) focusing on climate change aspects. In this perspective, capacity-building and awareness-raising initiatives are strongly needed to enable a common understanding of climate change implications for MSP and more specifically for the most vulnerable maritime sectors and marine uses.

Description of the new action

The new action enabled the design of a methodological approach for MSP climate-proofing in the NAS. This was based on the "Adaptation policy cycle" endorsed by the European Environment Agency (European Environment Agency, 2018) and operationalized in 6 steps in the Adaptation Support tool of Climate-ADAPT (the reference platform for climate change adaptation for the European Union, according to the 2021 EU Adaptation Strategy (COM(2021) 82 final)). The 6 steps aim to (1) prepare the ground for adaptation, (2) explore risks and vulnerability to the current and future climate risks, (3- 4) identify and assess adaptation options, (5-6) implement, monitor, and evaluate the adaptation results.

In step (1) a governance framework for the organization of the entire adaptation process is set up with the establishment of the core team that should follow the process and the identification of all relevant experts and stakeholders to be engaged. In this step, all relevant information about the state of the art of climate change projections and the existence of climate change strategic and planning documents in the study area is gathered.

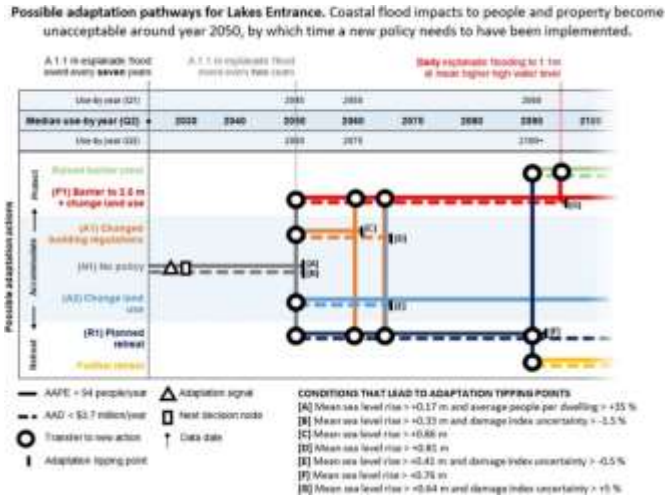
Step (2) explores climate change risks and vulnerabilities of key maritime sectors and activities (including environmental protection). The use of impact chains, co-created together with stakeholders, is suggested to explore and visualize what are the main climate change impacts and identify the main elements of exposure, sensitivity, and adaptation capacity featured by each sector, finally determining major climate risks. According to the available scientific literature, observations, and climate change projections for the NAS suggest increasing air and seawater temperatures and more frequent and stronger heatwaves. These changes are expected to create impacts on fisheries and aquaculture (displacement and mortality events of commercial species), tourism (thermal discomfort and lower attractiveness of destination), and environmental protection (increased effort to preserve most sensitive species and habitats). An example of one impact chain (for aquaculture) is provided below, while others are included in the extended report of the action.



Steps (3) and (4)deal with the selection and assessment of possible adaptation options that can be relevant for MSP. They include spatial measures (e.g. risk-based zoning and siting for aquaculture to avoid areas particularly at risk from climate change and to alleviate pressure on wild fish stocks) and/or governance and regulation measures (e.g. integration of climate change in ICZM). Possible adaptation options are identified in the extended report, which also

NEW ACTION: An integrated approach towards the climate-proofing of maritime spatial planning in the Italian Northern Adriatic Sea

provides a link to the Italian MSP plans' provisions.
Steps (5) and (6) deal with the implementation of the adaptation measures and their monitoring and evaluation over time. In terms of implementation, the proposed approach remarks the importance of the concept of adaptation pathway. These are alternative sequences of actions (adaptation measures) that can be implemented progressively, depending on future dynamics. When a critical threshold is reached, climate change can impose a change in the adaptation direction and the need to consider alternative strategies more effective in counteracting the new risk level.



Example of an adaptation pathway for the management of coastal development. (Ramm, T. D., Watson, C. S., & White, C. J. (2018). Strategic adaptation pathway planning to manage sea-level rise and changing coastal flood risk. Environmental Science & Policy, 87, 92–101. doi.org/10.1016/j.envsci.2018.06.001)

Adaptation monitoring should be part of the overall MSP monitoring plan, and not considered as a separate task. Several indicators already identified in the MSP monitoring plan can be used to specifically consider the specific issue of climate change, as identified in the extended report of the action. Adaptation monitoring should also reinforce synergies with other ongoing monitoring frameworks, like those related to the EU MSFD, Flood directive, or Habitats and Birds Directives.

Possible challenges/risks related to the new action

Limited availability of information about consistent regional climate change projections and about quantitative assessment of vulnerability and exposure may prevent detailed and quantitative analysis of climate change risks (step 2) for specific areas and sectors and impair the following selection of adaptation options (step 3).

Limited research and operationalization of adaptation measures for some maritime sectors (fishing and aquaculture in particular) can also represent an obstacle when dealing with implementation. Practical solutions to address climate change in the marine space often remain theoretical and lack examples of real implementation. Monitoring and evaluation of adaptation progress is key for climate risk management. However, this is still in an early stage in many countries (IPCC, 2022). The lack of inspiring examples of well-established monitoring frameworks for climate change adaptation, in particular as part of MSP, may condition the monitoring step (step 6). The real challenge is to develop indicators that can capture both adaptation outcomes and other environmental and socio-economic co-benefits. Lack of data to calculate indicators and lack of knowledge to define their baselines and benchmarks may also limit this task.

Finally, an important challenge is related to the fact that adaptation outcomes can be visible and measurable several years after the implementation of solutions, with a time frame much longer than the MSP revision cycle.

Gaps or challenges that the new action does not consider

Regional adaptation plans or strategies are only available for the Marche and Emilia Romagna regions, while preparatory works are ongoing in Veneto and Friuli Venezia Giulia. The new action does not directly address the preparation of these adaptation strategies, which somehow are considered pre-conditions for climate-proofing of MSP plans at the regional level. The proposed methodological approach can support a wider adaptation planning (beyond MSP-related aspects) sharing data and knowledge on climatic projections, impact evaluation, and possible adaptation options. A key point stressed by the new action is that the alignment between MSP plans and the recently approved National Climate Change Adaptation Plan (PNAAC, December 2023) or with the regional adaptation strategies and plans, is a progressive exercise, requiring continuous mutual adjustments.

Replicability /Elements which can be capitalised

The action is tailored to the Northern Adriatic area, where a preliminary assessment of climate change projections, impacts, and possible adaptation measures has been promoted, based on the available literature and knowledge. Nonetheless, the action can be applied to the whole Adriatic basin and the two other maritime areas covered by the national MSP plans (Tyrrhenian and Western Mediterranean, and Ionian-central Mediterranean). Limiting factors for this extension might be linked to the limited availability of data and knowledge on climate change projections and impacts.