

CREATE

Inventory of knowledge products

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1. Introduction and aim of this document

The European programming period 2014-2020 has been very profitable for the number of programmes and projects launched and implemented in the Mediterranean basin, in particular for what may concern the Adriatic Sea basin. Several calls for proposals in the basin have been financed and promoted by the Interreg CBC – Italy Croatia programme. These initiatives led to the development of tools, datasets, approaches, platforms, case studies, etc. useful for enhancing and boosting the adaptation and mitigation processes against climate change effects in many contexts. However, together with the succession of development and implementation of these methods, a lack of a systematic overview has implicated an inadequate tracking of the resulting products in other similar contexts at the Adriatic Sea level, thus hampering the transferability outside of the domains for which they were created.

Therefore, when CREATE began to be designed, the partnership put among the project objectives the necessity to make an inventory of the available tools, methodologies, datasets, etc. developed during the 2014-2020 programming period. Besides, an additional step has been conducted by labeling these methods according to the fields of application of the Joint Action Plan (hereafter JAP), a document jointly developed during the project CHANGE WE CARE (one of the cluster projects of CREATE) and referring to the main operators and users having relations with the Adriatic basin.

Indeed, afterward the recognition conducted by the CREATE staff to search the methodologies to be systematically grouped, other products developed by other projects have been found as suitable to be listed to enhance adaptation and mitigation to climate change and have been further categorized under the JAP's implementation categories.

The results of these surveys are represented in this deliverable as a systematic list acting as an Inventory of Knowledge that can be updated as soon as other tools, methodologies, case studies, etc. are considered suitable to be inserted.

This deliverable has been conceived as a ready-to-use tool for end-users, researchers, technicians, planners, or anyone interested in undertaking a decision-making process to face climate change effects.

2. The Inventory of Knowledge

Database of adaptation solutions

Governance and Integrated coastal Planning

Aiming at supporting local planning for climate change in coastal urban areas of the Adriatic Sea. Adaptation solutions are presented as 43 adaptation options, with 11 practical case studies in 3 languages: Italian, Croatian and English.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches

Successful and validated solution: the platform showcases implemented so validated solutions.

Ready to use: solutions showcased need to be adapted to the specific institutional setting.

Transferable: case studies have been selected on the base of criteria ensuring their transferability (type of impacts addressed, same bio-geographic region, similar climatic conditions).

- [Adriadapt website](#)

Integrated Adaptation Planning Tool

Governance and Integrated coastal Planning

The Integrated Adaptation Planning Tool is developed to lead users along the process of preparing a local or regional coastal adaptation plan.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches

Successful and validated solution: the tool has been tested by local partners of the ADRIADAPT project, in particular the city of Udine, the city of Cervia, city of Vodice and the Union of Municipalities of the Savio Valley. It is based on an approach recognized in the domain (see Adaptation support tool in Climate ADAPT and Covenant of Mayors, as well as on the Coastal plans of UNEP/MAP PAP/RAC).

Ready to use: the tool has been implemented on the publicly available web platform. Several relevant Coastal plans and adaptation plans are available in Croatian, Italian and in English in full version and in summary.

Transferable: the tool is transferable, since it guides the users through a step-by-step approach in adaptation planning and provides examples for easier transferability.

- [Integrated Adaptation Planning Tool](#)

Cadastre of Coastal Infrastructure

Governance and Integrated coastal Planning

The Cadastre of Coastal Infrastructure serves for the analysis of the vulnerability and sustainability of the coastal infrastructure. it contains data on the infrastructure in from of the coast and should understood as a "living database" for further supplement, develop and use for climate change related-risk.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches

Successful and validated solution: solution has been validated in Šibenik-Knin County, and latter on in the city of Kaštela. Development of such cadastre has been recognized in the Coastal Plan for the County as the priority for managing and enhancing coastal resilience.

Ready to use: methodology is ready to be used, however, detailed documentation is still available only in Croatian.

Transferable: the tool has already been transferred for the city of Kaštela. Since detailed documentation is still in Croatian only, tool is easily transferable in Croatian coastal zone, but would need assistance for other language areas.

- [Coastal infrastructure cadastre](#)
- [Katastar obalne infrastrukture](#)
- [Catasto delle infrastrutture costiere](#)

**Guidelines
for climate
change
monitoring
in the
cooperation
area**

Adaptation and
mitigation
capacity
building

This guideline collects recommendations, based on the experiences, that can be implemented in other contexts to assure sustainable and durable long-term climate monitoring. The recommendations spans monitoring programs, management tools, indication on open data approaches

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches

Successful and validated solution: developing such a framework permits to follow precise steps to quantify the effects of climate changes on the physical, biogeochemical, and biological systems.

Ready to use: the tools described are already available and ready to be employed.

Transferable: no constrains are present in these recommendations which are developed at the Adriatic level and can be applied to all the surrounding countries.

- [Guidelines for climate change monitoring](#)

Coordination Plan

Governance and integrated coastal planning

This plan compares among different strategies of other territories

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches

Successful and validated solution: the document aims to guarantee a homogeneous approach for stakeholders' engagement. These approaches have been already applied and are collected to create a support for anyone responsible in realize and strategize measures to increase resilience to climate change.

Ready to use: the document is available and ready to be employed. It collects all the steps to be undertaken to plan a correct stakeholder's engagement and increase the effectiveness of the actions against effects of climate change.

Transferable: no constrains or particular regulatory framework are present or limit the document.

- [Coordination plan](#)

Conceptual model to manage protected areas

Marine biodiversity

This model aims to identify the key oceanographic processes, variables, and performance indicators for management questions on environmental quality, conservation, and biodiversity of Natura 2000. by monitoring environment, species, and habitat variations, this model can be employed to monitor climate change

Coherence with 2021-2027 priorities: SO 2.2 - Enhancing protection and preservation of nature, biodiversity and green infrastructure, including in urban areas, and reducing all forms of pollution

Successful and validated solution: the model considers many elements related to the N2K management: social, ecological, and oceanographic elements. The idea wants to connect the observing system with the management of the N2K network and some sites have already been analyzed within the model with a description of the performance indicators, conservation measures, and management objectives to be addressed.

Ready to use: the model is available for being implemented in other sites.

Transferable: the model is directly connected to ECOAdS, a database collecting ecological and oceanographic variables that feed performance indicator and assess if management objectives are achieved.

- [The application of the conceptual model](#)
- [ECOAdS](#)

Model driving forces for oil spill simulations via GNOME model

Multi-hazard risk management

A service to support management of hazards and based on models aimed to investigate climate change, it can be implemented for monitoring currents and potential variations deriving from climate change

Coherence with 2021-2027 priorities: SO 2.2 - Enhancing protection and preservation of nature, biodiversity and green infrastructure, including in urban areas, and reducing all forms of pollution

Successful and validated solution: this tool simulates oil trajectories and incorporate forecasting information. Every simulation is identified with a unique IDE containing information about the simulation specific features.

Ready to use: the model is already running with animations and forecast trajectories.

Transferable: no constrains are present and the tool is usable from anyone.

- [Gnome Model Driving Forces](#)

Decision support system (DSS) to select adaptation options

Governance and integrated coastal planning

The main function is to assess alternative climate change adaptation plan to support decision towards climate proof city/area based on key sustainability and adaptation measures components.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: the methodology has been tested and applied to five pilot areas: Municipality of Pesaro (IT), Municipality of Misano Adriatico (IT), Municipality of Dubrovnik (HR), Municipality of Vrsar (HR), Regional Natural Park "Coastal Dunes Torre Canne" (IT).

Ready to use: the iDEAL project proposed an operational methodology to support local administrations in the development and evaluation of climate adaptation action plans through a shared and participated decision process.

Transferable: the methodology allows to select strategy and context-specific clusters of adaptation measures as well as indicators and criteria for the evaluation process.

- [Project iDEAL](#)
- [An innovative climate adaptation planning process: iDEAL project](#)

The guidelines manual

Governance and integrated coastal planning

The guidelines manual, jointly developed by all joint-SECAP partners, constitutes the framework within which all activities are developed. It defines all activities, their duration and actors engaged

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: This document is a summary of the work carried out in previous European projects regarding climate change in the Joint-SECAP regions. It focuses on the past and present trends and of future climate projections.

Ready to use: the manual is a ready-to-use tool available online.

Transferable: the guidelines manual is a free online tool available for transferability to anyone that would access it.

- [Vulnerability and Risk Assessment Tutorial](#)
- [Annex](#)

Context analysis

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The context analysis is essential to collect information and resources that will be used during the other activities of the project and is considered as the knowledge-base of data to learn and disseminate values of each territorial context.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: this is a database of plans, measures and financing sources for each target area with a special focus on the energy and climate ones. It provides useful information for adaptation actions, defined in accordance with policies and plans implemented at national, regional and local level.

Ready to use: the database is a ready-to-use tool available online.

Transferable: the database is a free online tool available for transferability to anyone that would access it.

- [Collection of experiences and plans](#)

Climate risks and vulnerabilities for each target area

Flood/hazard risk maps and data

The report aimed at collecting and possibly mapping all climate risks and vulnerabilities for the Joint-SECAP partners' designated target areas. It summarizes the collection of the assessments produced in each territory.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: this report collects and maps the climate risks and vulnerabilities for each target area; it summarizes the collection of the assessments produced in each territory where Joint-SECAP partners are developing and implementing joint adaptation measures.

Ready to use: the report is a ready-to-use tool available online.

Transferable: the report is a free online tool available for transferability to anyone that would access it. Similar contexts can be inspired by the methodologies implemented by this actions and replicate themselves.

- [Climate risks and vulnerabilities for each target area](#)
- [ANNEX - Climate risks and vulnerabilities in local language - Part A](#)
- [ANNEX - Climate risks and vulnerabilities in local language - Part B](#)

Manual for the use of the "Joint SECAP Support System Platform"

Governance
and integrated
coastal
planning

This manual is a deliverable of the Joint_SECAP project that provides support for the use of the System Platform, available on the website: <https://joint-secap.unicam.it>

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: the Platform is a web tool that can be freely consulted by everyone and offers dedicated pages in which the project partners can enter specific data of their target areas.

Ready to use: the manual is a ready-to-use tool available online.

Transferable: the manual is a free online tool available for transferability to anyone that would access it.

- [Manual for the use of the "Joint SECAP Support System Platform"](#)

Report on the final climate scenario for each district area

Governance and integrated coastal planning

Climate change requires due attention of all stakeholders at all levels and profiles. In order to stimulate thinking about possible consequences, opportunities and risks, and courses of action, this activity included the development of climate scenarios, namely scenario “0” and the final (optimal) scenario for each target area.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: scenario “0” assumes that in the near future there will not be any legislative, strategic, technological, economic, behavioral or priority changes keeping the usual circumstances unaltered and, accordingly, possible consequences of climate change. The latter was developed based on risk and vulnerability assessments (RVA) performed for each target area.

Ready to use: the report is a ready-to-use tool available online.

Transferable: the report is a free online tool available for transferability to anyone that would access it.

- [Report on the final climate scenario for each district area](#)
- [Report on conclusions proposed during each Focus Group](#)

Guidelines for the Application of the SEA to Joint SECAP

Governance and integrated coastal planning

Combination of the construction of the scenario analysis with the Strategic Environmental Assessment (SEA) process.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: the objective of these Guidelines is to optimize the forecasts of the Action Plan, or to solve the problems of cumulative effects, large-scale impacts, intersectoral and indirect impacts, ensuring the sustainability of the environmental matrix of each target area through alternative and realistic solutions. In the Joint SECAP project, WP4 main expected output is the definition of Joint SECAP plans in each target area selected by the partnership. The project aims at the development of Joint Actions between different municipalities as a large-scale strategy capable of improving the definition and management of climate change adaptation measures and fostering an integrated and participated approach by involving multiple stakeholders. The project will provide the subscription of one Joint Action plan in each target area (8 in total) consisting of real measures, responsibilities, and tasks. The output includes the comparison and evaluation of pilot and previous experiences and the indication of real actions to be followed in order to implement a site-specific governance, aiming at producing wider effects.

Ready to use: the guidelines are a ready-to-use tool available online.

Transferable: the guidelines are a free online tool available for transferability to anyone that would access it.

- [Guidelines for the Application of the SEA to Joint SECAP](#)
- [Preliminary Scoping Report](#)

Target 8 Joint SECAP plans

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coastal
planning

The Joint Actions are first all based on the real needs of the target areas and the Joint actions are concrete, feasible, inserted into the adaptation framework and coherent with the sectoral strategies at higher levels (climate change, sustainable development, etc...).

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: the plan highlights the governance model and the process that made the partners choose between different actions and measures in order to stimulate a better comparison among the different strategies of other territories. The description will also include the conditions noted by the partners so that the plans are activated concretely. Moreover, it there is a report with the description of the Joint Actions planned in the different target areas of the JOINT-SECAP project.

Ready to use: the plan is a ready-to-use tool available online.

Transferable: the plan is a free online tool available for transferability to anyone that would access it.

- [Target 9 Joint SECAP plans](#)
- [ANNEX I - Joint Actions Repertoire - Part A](#)
- [ANNEX I - Joint Actions Repertoire - Part B](#)
- [ANNEX II - SECAP PLANS \(in local language\) - Part A](#)
- [ANNEX II - SECAP PLANS \(in local language\) - Part B](#)

**Report
about
workshop
activity of
Joint SECAP
Coordinator
s**

Governance and
integrated
coastal planning

The Report is a collection of the local reports produced by partners and Joint-SECAP coordinators which delivered local technical workshops.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: the Report provides for the organization of a technical workshop to compare and disseminate the experiences made in the different territories in order to validate the tested methodology. Moreover, it collects the materials for the delivering of the local seminars, to facilitate the use of the platform and to ensure the implementation of common actions, and the reports of each local seminar.

Ready to use: the report is a ready-to-use tool available online.

Transferable: the report is a free online tool available for transferability to anyone that would access it.

- [Report about workshop activity of Joint SECAP Coordinators](#)

Monitoring system and future climate change assessment

Meteo-marine monitoring system

Existing monitoring system is enhanced with additional climate stations to acquire meteorological and oceanographic climate data in Italy and Croatia. This system has been improved and integrated with additional data coming from collateral initiatives.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: repositories of projected climate data are free and available online, both raw and with included bias corrections. Added real-time monitoring system is publicly free and online for anyone who wants to observe and examine air temperature, humidity, pressure, wind speed and direction, as well as the sea temperature and sea surface height at station. Assessment reports are publicly available within the RESPONSE Interreg webpage.

Ready to use: repositories of projected climate data are catalogued in a NetCDF form, making them easily accessible with different applications. Monitoring system includes online graphical displays of real-time climate data at Adriatic hotspots. Results are systematized in reports making them a solid ground for climate change monitoring improvement and for planning of adaptation measures, by tackling specific effects in the area.

Transferable: repositories of projected climate data are freely available for anyone accessing it, as are the real-time monitored data. However, long-term monitored data are available only on request.

- [Climate change projections assessment: analysis of regional climate models' simulations](#)
- [Climate change projections assessment: bias-correction of regional climate models' simulations](#)
- [Repositories of raw data 1](#)

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- Repositories of raw data 2
 - Pilot places with bias correction
 - Inclusion of the new observation weather and climate stations into regional and national networks

Climate Menù for Adriatic Regions

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coastal
planning

Climate Menù for Adriatic Regions is a free online repository of adaptation and mitigation actions that can support local policies to address future challenges of climate change.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: each adaptation option showcases successful use cases, which can ease understanding of criticalities.

Ready to use: solutions need to be adapted to local contexts.

Transferable: the repository is a free online tool available for anyone accessing it, solutions need to be adapted to the local institutional and socio-economic context.

- [Climate Menù](#)

Coastal Multi Model Forecasting Systems

Multi-hazard
risk
management/
Flood and
hazard risk
maps and data

A meteocean forecasting system combining sea ocean measurements from many different sources. The software was originally developed for I-STORSMS Web System and further improved within STREAM.

Coherence with 2021-2027 priorities: SO 2.1 - Promoting climate change adaptation and disaster risk prevention, resilience taking into account eco-system based approaches.

Successful and validated solution: in the framework of the STREAM project, a multi-model ensemble was further developed by restructuring the computational procedure and by integrating more operational systems into the operational chain. In the multi-model ensemble system, all available forecasting systems were integrated, with 10 predicting sea level height (either storm surge or total water level) and 10 predicting the wave characteristics.

Ready to use: The MMES software is released as an Open Source Python library that can be downloaded and installed from GitHub repository <https://github.com/CNR-ISMAR/mmes>. The products of the ensemble (mainly mean and standard deviation of the relevant quantities) are publicly available.

Transferable: the software for the creation of the ensemble is publicly available and can be relatively easily transferred to other regional frameworks where some meteocean forecasting systems are already implemented. Alongside with the software code available on GitHub, the ensemble results are publicly available on thredds data server and can be visualized on <https://iws.seastorms.eu/> and www.seastorms.eu

- [Project STREAM](#)
- [MMES](#)

