

Deltares



2024-2026

STRATEGIC WORKPLAN

DCC-CR Partner Alliance Network

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"AUGUSTO RIGHI"



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1 MANDATE AND MISSION OF THE CENTRE

The Decade Collaborative Centre for Coastal Resilience (DCC-CR) is a Centre of the Department of Physics and Astronomy of the University of Bologna, funded by the Emilia-Romagna Region, which operates within the remit of the United Nations Decade of Ocean Science for Sustainable Development (“Ocean Decade”).

In particular, the DCC-CR focuses on the Ocean Decade Challenge 6: Increase community resilience to ocean hazards. Challenge 6 prioritises the enhancement of multi-hazard early warning services for all geophysical, ecological, biological, weather, climate, and anthropogenic related ocean and coastal hazards, and the mainstreaming of community preparedness and resilience.

Within the global Ocean Decade ecosystem, the DCC-CR supports the Decade Coordination Unit (DCU), based in the Secretariat of the Intergovernmental Oceanographic Commission of UNESCO (IOC-UNESCO), by providing decentralised thematic coordination around Challenge 6.

In 2025, the DCC-CR strengthened its capacity by creating the DCC-CR Partners Alliance Network, featuring Deltares and the Euro-Mediterranean Centre on Climate Change (Centro Euro Mediterraneo sui Cambiamenti Climatici - CMCC) Foundation as contributors endorsed by the UN Decade. This initiative will introduce additional key expertise, and resources, enhancing the DCC-CR’s ability to achieve its strategic goals with greater efficiency and impact. These partnerships will reinforce the DCC-CR’s efforts to provide transformative science-based solutions for coastal resilience, fully aligned with the objectives of the UN Decade of Ocean Science for Sustainable Development.

The main mission of the DCC-CR is to strengthen the connection between the new science and technology development in the Ocean Decade and coastal stakeholders, implementing innovative co-design practices for coastal resilience.

¹ <https://oceandecade.org/challenges/>.

2 STRATEGIC OBJECTIVES

In order to operationalize its mission, the DCC-CR has set out four strategic objectives:

- **SI** – Improve science information for all
- **SE** – Enhance stakeholder engagement
- **EE** – Promote equitable education and training
- **EJ** – Uphold environmental justice for coastal communities

A brief description of each strategic objective, followed by expected results, is given below. The expected results will be connected to measurable indicators of achievement of the goals.

SI IMPROVE SCIENCE INFORMATION FOR ALL

Ocean coasts are highly vulnerable areas of the planet where the population concentrates and human impacts on the marine ecosystems may become increasingly adverse.

The UN Ocean Decade is expected to transform our understanding of ocean coastal areas, as well as improve their monitoring and prediction. Coordination and synthesis of these efforts are therefore necessary, along with the promotion of new actions to fill gaps. Ensuring open access and data-sharing is fundamental to enhance the scientific value of outputs, to foster collaboration, and to enable evidence-based decision-making for coastal resilience. For this strategic objective, the DCC-CR will document scientific case studies from Decade Actions trying to resolve gaps in a timely manner, recommend potential new science and technology actions, in particular support new community science for coastal resilience and advise the DCU on the advancements in several sectors of coastal science and engineering.

The inclusion of CMCC and Deltares as strategic partners significantly expands the scope and effectiveness of SI. The contributions of CMCC and Deltares include facilitating access to Digital Twins, Multi-Hazard Early Warning Systems, climate downscaling methodologies and open-source platforms for coastal management. Both Partners will foster the integration of AI-enhanced data analysis, visualization and decision-making processes, providing actionable insights for stakeholders.

Expected Results:

- SI.1 Design and implementation of a knowledge hub on coastal resilience centred on information delivered with different tools such as podcasts and webinars, among others.
- SI.2 Increased dissemination of knowledge through collaborative scientific publications and international networks.
- SI.3 Promotion of coastal community science through public workshops and training.

SE ENHANCE STAKEHOLDER ENGAGEMENT

Mach et al. (2020) write: “Scholars and practitioners have increasingly advocated that the traditional linear model of knowledge production, with its unidirectional flow of information from researchers to policy-makers, be replaced by a new approach in which researchers and knowledge-users meaningfully interact to co-create knowledge that is actionable in decision-making.”

It is imperative for the DCC-CR to enhance stakeholder engagement in the design, testing and uptake of the science and technology for coastal resilience resulting from Decade Actions. Specifically, the DCC-CR will engage with coastal stakeholders in collaborative transnational endeavours, towards the achievement of the Decade’s goals.

DCC-CR, in partnership with CMCC and Deltares, will collaborate to create a dynamic framework for raising awareness for coastal communities and engage them in support of relevant priorities set by up to level IOC-UNESCO and its Member States. The Partners Alliance Network will and promote substantive interactions, supporting co-design, co-development, co-delivery and equitable partnerships at different stages of the Decade science creation process.

Expected Results:

- SE.1 Effective mapping of coastal stakeholders to identify needs and opportunities for engagement.
- SE.2 Development and deployment of digital dialogue tools to facilitate equitable interactions.
- SE.3 Organization of workshops and hackathons to foster collaboration, innovation, and the practical application of coastal resilience tools.

EE PROMOTE EQUITABLE EDUCATION AND TRAINING

Knowledge of coastal marine hazards and impacts of climate change on the coasts has increased in the past twenty years. However, the process of developing this knowledge and its results has not been equally shared among different communities, especially between the Global North and South.

To reverse this trend, training activities should be developed to inform, broadly and in a timely fashion, the public, Early Career Ocean Professionals (ECOPs) and professional practitioners on coastal resilience. Aligned with this strategic objective, the DCC-CR launched the Coastal Resilience School which operates on the IOC-UNESCO Ocean Teacher Global Academy (OTGA) platform (2023-2024 period).

The contributions of CMCC and Deltares will significantly enhance these efforts. Deltares will lead the establishment of an Itinerant Summer School on Coastal Resilience, focusing on capacity building in vulnerable regions of the Global South and providing targeted training in numerical modelling, data science, and the application of tools for coastal management. CMCC will lead the formulation of workshops on climate adaptation and coastal modelling and monitoring (citizen science and low-cost observing systems), along with specialized training programs for ECOPs, ensuring that the next generation of ocean professionals is equipped to address emerging challenges. Together, these initiatives empower communities and professionals with the tools and knowledge to foster resilient coastal systems.

Expected Results:

- EE.1 Continuous management of the DCC-CR School on Coastal Resilience operated with IOC-UNESCO on the Ocean Teacher Global Academy platform.
- EE.2 Implementation of an Itinerant Summer School on Coastal Resilience, prioritizing countries in the Global South and indigenous communities
- EE.3 Promotion of workshops on coastal climate adaptation prioritizing the participation of ECOPs and the Global South
- EE.4 Continuation of the CoastPredict training course series “Coastal modeling for protection and conservation of natural resources” (COMPASS)

EJ UPHOLD ENVIRONMENTAL JUSTICE FOR COASTAL COMMUNITIES

The adverse effects of climate change are not equally distributed but tend to mostly impact already poor and vulnerable coastal communities in the Global South. In order to fully advance coastal resilience, it is therefore necessary to couple the development of scientific concepts with the realization of environmental justice. The DCC-CR will conduct empirical research to examine the relationship between resilience and equity in coastal regions, providing data-driven insights that inform justice-focused strategies.

The DCC-CR, in partnership with CMCC and Deltares, is advancing this mission through innovative and inclusive initiatives. CMCC will integrate indigenous knowledge systems into resilience planning and will prioritize capacity-building programs for marginalized actors in the Global South. These combined efforts ensure that resilience strategies are both scientifically robust and socially inclusive, providing a foundation for long-term sustainability.

Expected Results:

- EJ.1 Select case studies and promote UN Ocean Decade international projects, prioritising LCDs and SIDS locations.
- EJ.2 Carry out empirical studies on environmental justice for coastal communities.
- EJ.3 Design coastal stakeholder dialogue tools, developing innovative and community-specific projects.

⁵ The UN Decade ECOP programme aims to empower all those who self-identify as being early in their career in any field related to the ocean.

3 CROSS-CUTTING ACTIVITIES

In addition to the specific strategic objectives, several cross-cutting activities are envisaged both at the explicit request of the DCU and from the initial work of the DCC-CR.

3.1 GLOBAL SOUTH COASTS

The DCU has identified a significant gap in the representation of Decade Actions from the Global South. From a coastal resilience perspective, this under-representation of actors from the Global South is particularly concerning.

To address this disparity, the DCC-CR, together with CMCC and Deltares, will adopt a Global South focus, prioritizing greater inclusion and equity in alignment with its strategic objectives and mandate. This approach will translate into practical activities such as:

- Provide tailored assistance to scientific institutions in the Global South to develop and submit new Decade Actions, including guidance on proposal preparation and alignment with strategic priorities.
- Co-organize sessions and side events at major Ocean Science and Ocean Decade meetings to highlight Global South perspectives and challenges, while promoting collaboration opportunities and supporting the organization of similar events within the Global South.
- Explore and pursue existing and new funding mechanisms to enhance resources for Global South institutions, ensuring their active and sustained participation in advancing coastal resilience.

This comprehensive focus aims to empower Global South actors and foster innovative solutions that address the unique challenges faced by these regions.

3.2 COMMUNITY OF PRACTICE ON COASTAL ECOSYSTEM AND COMMUNITY RESILIENCE

The DCC-CR is the administrator of the Community of Practice (CoP) on Coastal Ecosystem and Community Resilience hosted on the Ocean Decade Network. The Ocean Decade Network is an interactive online platform for ocean-minded professionals who want to actively engage with the Decade and work together towards its mission of bringing transformative ocean science solutions for sustainable development, connecting people and our ocean.

The CoP Coastal Ecosystem and Community Resilience aims to offer an open space in which to debate and exchange best practices for coastal areas around the world. The CoP Coastal Ecosystem and Community Resilience will interact with other CoPs and will include Decade Action partners. Webinars will be organised to share information between Decade Actions and selected stakeholders. The CoP hub will be also used as a live discussion space between the involved partners.

3.3 CITIES WITH THE OCEAN

The DCU prepared a concept paper outlining a strategy to connect science and cities across 10 Ocean Decade challenges. The strategy focus is for "ocean cities to leverage ocean science in fostering a harmonious relationship with the ocean, utilizing preserved marine ecosystems to address the challenges posed by global change and rapid urbanization, while seizing opportunities to enhance the quality of life for their residents."

Under the coordination of the DCU, working groups have been established to create a network of Cities with the Ocean, under a platform that seeks to involve representatives from municipalities and coastal stakeholders working in urban coastal environments.

The DCC-CR, in partnership with CMCC and Deltares, is a key player among related Ocean Decade actions and it will facilitate occasions for discussion and dialogue between the urban communities and the UN Decade Actions.

In addition, a Working Group on Knowledge has been established under the "Ocean Rise and Coastal Resilience Coalition". The DCC-CR is contributing to this Working Group, toward a global initiative to connect actors of knowledge related to coastal resilience and adaptation of cities and ports.

3.4 GLOBALCOAST INITIATIVE

CoastPredict, a UN Decade endorsed Programme, is launching GlobalCoast, a science and technology initiative/experiment where transformational observing and prediction systems will be demonstrated. GlobalCoast will be implemented in partnership with the Global Ocean Observing System (GOOS) Program.

GlobalCoast will implement the CoastPredict projects and guidance principles in a range of contrasting global coastal oceans to demonstrate the value of an integrated and fit-for-purpose coastal observing and prediction system that delivers innovative products and services for coastal resilience, in collaboration with local stakeholders for both natural and built environments.

CMCC leads the development of the GlobalCoast network and Deltares is a key player in CoastPredict. Together with DCC-CR they will coordinate the implementation of this international initiative by preparing specific projects that will seek comprehensive and collaborative funding.

4 RESULTS ACHIEVED IN THE FIRST PERIOD 2023-2024

During the reporting period of 2023–2024, the Decade Collaborative Centre for Coastal Resilience (DCC-CR) successfully delivered on strategic objectives. Below is a detailed summary of the achievements for this period:

SI IMPROVE SCIENCE INFORMATION FOR ALL

DCC-CR has co-led the writing of the Vision 2030 white paper on coastal resilience: Pinardi, N. et al. (2024). Ocean Decade Vision 2030 White Papers – Challenge 6: Increase Community Resilience to Ocean Hazards. Paris, UNESCO-IOC. (The Ocean Decade Series, 51.6.). <https://doi.org/10.25607/smm1-nq79>

DCC-CR has co-led the writing of the First European Assessment Report on Sea Level Rise: <https://oceandecade.org/publications/first-european-assessment-report-on-sea-level-rise/>

SE ENHANCE STAKEHOLDER ENGAGEMENT

2023- 2 workshops on Coastal resilience:

- January 18, 2023, titled “Integrated Coastal Management and Marine Spatial Planning in support of Coastal Resilience”
- December 12, 2023, titled “Sharing best practices in the sustainable management of coastal environments”

2023- co-designed with CoastPredict and in collaboration with CMCC and Deltares, the mapping of stakeholders for GlobalCoast

2024- Ocean Sciences Town Hall meeting “A Dialogue on Coastal Cities and Coastal Community Resilience”

024 Events at the Ocean Decade Conference in Barcelona

- Satellite event “Coastal Futures: Charting Priorities for Resilience”
- Challenge 6 event for Session 3: Science and Solutions for a Safe and Predicted Ocean

2024 Ecomondo 4-Days workshops: “The power of science for coastal communities: better informed, better prepared”, Rimini

EE PROMOTE EQUITABLE EDUCATION AND TRAINING

Developed and implemented the Coastal Resilience School and its first course (Jan 27-April 4, 2025) titled “Sustainable Coastal Growth and Resilience (Co-Growth)” on the OTGA platform.

Developed the concept of the first high school Training Course with Rimini Blue Lab “Clima e Oceanografia” with the participation of CMCC.

Contributed to the CoastPredict training course “Coastal modeling for protection and conservation of natural resources in the Philippines” (COMPASS-Philippines), in collaboration with CMCC, on ocean modeling and AI for coastal physical and biogeochemical characterisation and increased resilience in the Philippines

EJ UPHOLD ENVIRONMENTAL JUSTICE FOR COASTAL COMMUNITIES

Completed a literature review on environmental justice, laying the groundwork for actionable insights and informed decision-making.

CA CROSS-CUTTING ACTIVITIES

Student selection for the OTGA “Co-Growth” course focused on Global South representation

Organised 10 Community of Practice activities

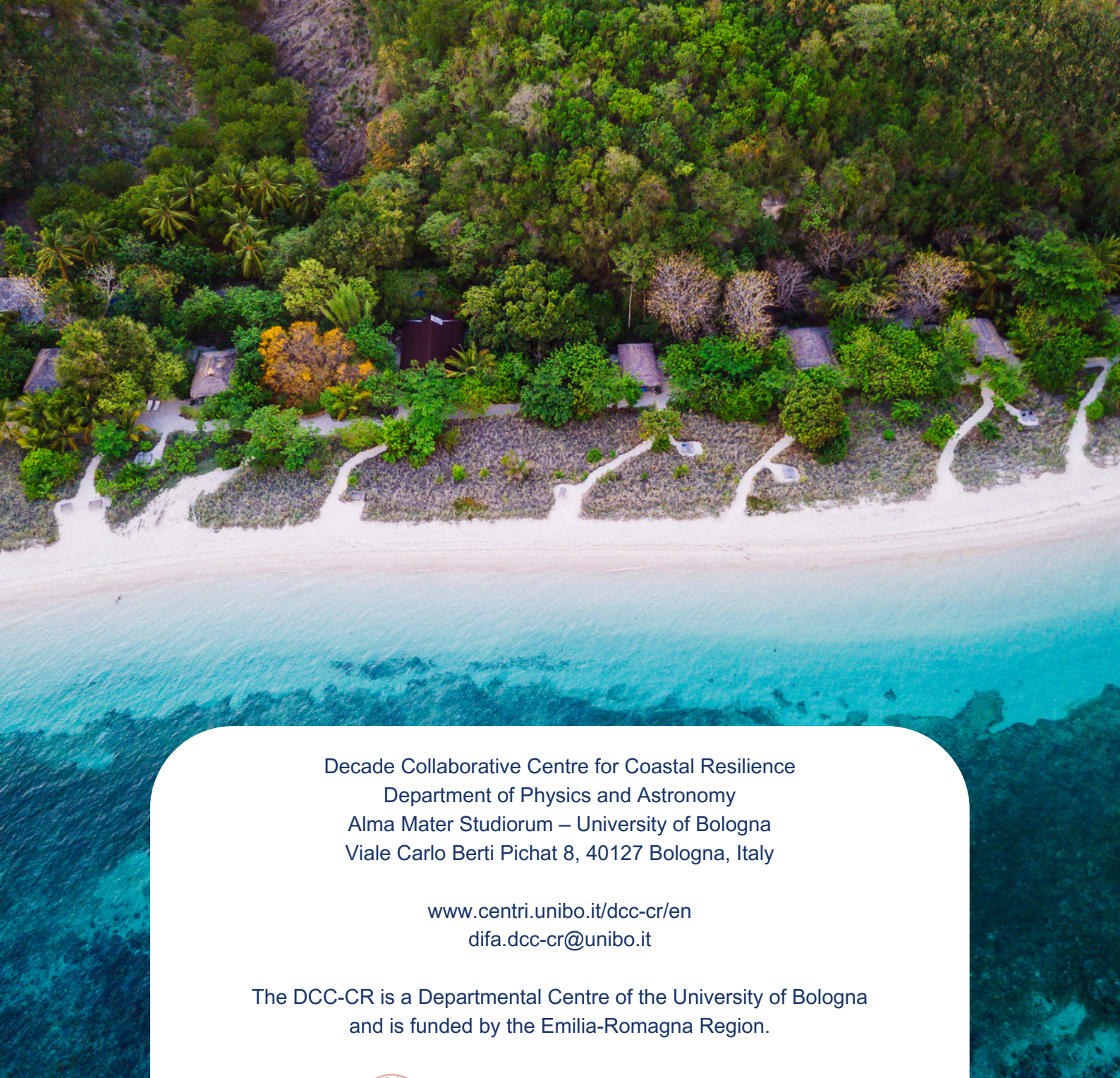
Actively engaged in the “Cities with the Ocean” platform writing group

Actively engaged in the “Ocean Rise and Coastal Resilience Coalition” working group on Knowledge

Contributed to drafting the Memorandum of Understanding for the GlobalCoast Network







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