Final media press kit

June 2025

score

Smart control of the climate resilience in European coastal cities

Foreword

Climate change is no longer a distant threat; its impacts are already lapping at our shores. European coastal cities are grappling with more frequent storms, flooding, coastal erosion, and rising sea levels. In response to these unprecedented challenges, the SCORE project was established under the Horizon 2020 program to help coastal communities not just adapt but thrive. SCORE has been a four-year mission to strengthen climate resilience in cities across our coasts. As the project coordinator, I am proud to share the journey and achievements of this remarkable initiative.

Over the past four years, SCORE built a vibrant network of ten Coastal City Living Labs. In each of these living labs, local communities, scientists, and city officials worked side by side to co-create solutions tailored to their unique climate risks. This grassroots approach was at the heart of SCORE's success. We developed a co-creation toolkit to guide our partners in engaging stakeholders, ensuring that every voice, from concerned residents and fishermen to planners and policymakers, could contribute to designing effective climate adaptations. By bringing everyone to the table, we ensured the solutions were not only innovative but also embraced and enriched by those who need them most.

Citizen science and education also played a key role. We empowered residents with low-cost environmental sensors to monitor local conditions, turning data collection into a shared community effort. At the same time, we reached out to a wider audience through interactive educational tools, from engaging simulation games to free online courses, to spread awareness about coastal resilience. These activities not only yielded valuable data for our research but also sparked a sense of ownership in communities, proving that climate action is most powerful when it is inclusive and participatory.

Our team of researchers invested heavily in advancing the science underpinning coastal resilience. We generated reliable climate projections and detailed climate risk maps and tools, downscaled to provide actionable insights for each city. All of this information was integrated into a cutting-edge ICT platform, a one-stop hub where data can be shared and visualized by scientists, decision-makers, and the public. Through this open platform, cities now have easy access to the best available evidence, helping them understand their risks and plan more effectively for the future.

Innovation in technology was another cornerstone of SCORE. One of our flagship achievements is the creation of a digital twin of the coastal city environment, a dynamic virtual model that mirrors the real-world coastal conditions in real time. Paired with a new early warning support system we developed, this digital twin allows city planners and emergency services to simulate scenarios and respond to threats like storms or flooding before they strike. These tools bring foresight into urban planning and disaster management, enabling coastal cities to be proactive and smart in protecting their communities.

Equally important, SCORE championed Nature-Based Solutions (NBS) and Eco-system-based Adaptation (EBA) as sustainable defences against climate impacts. We compiled an extensive Ecosystem-Based Adaptation catalogue, highlighting how restoring natural systems, from salt marshes and sand dunes to urban green spaces, can shield our coastlines while providing biodiversity and recreational benefits. Alongside this, our experts carried out socio-economic assessments and created financial risk analysis tools to help city authorities evaluate the costs and benefits of these green solutions.

By demonstrating the effectiveness and economic viability of NBS, we have encouraged cities to invest in nature as a first line of defence, complementing traditional engineering with the wisdom of the natural world.

On a personal note, leading the SCORE project has been one of the most rewarding experiences of my career. Our consortium united 28 partner organisations and hundreds of individuals, all driven by a shared commitment to safeguarding our coastal cities. I am continually inspired by the dedication of our team and the enthusiasm of local citizens who volunteered their time and ideas in each living lab. This collective effort, harnessing both expert knowledge and community wisdom, turned ambitious ideas into tangible solutions. It has been a privilege to witness engineers, climatologists, ecologists, city planners, and residents working hand in hand, learning from each other, and innovating together. I am immensely proud of what we have accomplished and the positive impact we have made.

As we conclude this four-year journey, I look to the future with optimism. The SCORE project leaves a lasting legacy for coastal resilience in Europe, one built on science, innovation, and the power of coming together. The lessons we learned and the tools we developed are now in the hands of the communities and leaders who will carry this work forward. I truly believe that the momentum we've created will continue to grow. Our hope is that SCORE's example will inspire many more initiatives, big and small, to rise to the challenge of climate change. In the years to come, when coastal cities stand stronger against storms and rising tides, when citizens remain vigilant and engaged, and when nature is valued as an ally in our defences, we will see the true legacy of SCORE.

Dr Salem Gharbia
SCORE Project Coordinator
Atlantic Technological University

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Press release

Rimini, 16 June 2025

SCORE project's legacy towards the climate resilience of European coastal cities

The EU-funded SCORE project is coming to an end in June 2025, after 4 years of work towards increasing the climate resilience of coastal cities. Through an innovative Coastal City Living Labs (CCLL) framework, and the use of smart technologies and Nature-based Solutions, SCORE has reached significant results for all European coastal cities.

The SCORE project in a nutshell

SCORE has enabled a network of 10 coastal cities and communities to act on climate change by integrating nature-based solutions, Living Labs, and digital technologies to create scalable, locally-embedded climate adaptation strategies.

Making solutions meaningful at a community level

Climate change and climate adaptation strategies have too long been addressed by top-down processes, creating out-of-touch and disconnected solutions from local needs and priorities. SCORE overcame this challenge through systematic collaboration, using its co-creation toolkit with local stakeholders in its 10 Coastal City Living Labs, and empowering communities through citizen science activities.

Increasing data availability in coastal cities to support better decision-making

Creating effective climate mitigation strategies requires high-quality local data, which are often lacking in coastal communities. SCORE has developed a suite of tools to expand the data pool available to the CCLLs and allowing them to implement more comprehensive coastal monitoring systems. These tools focus on risk assessment, coastal erosion and flooding maps, sensors, and combine data into a single platform.

Developing green and technological tools for climate adaptation strategies

The integration of green approaches with innovative technology is essential for effective climate adaptation strategies. With SCORE, coastal cities have access to comprehensive solutions blending Nature-based Solutions with smart and monitoring tools to help them visualise and understand their adaptation options.

"If the SCORE project has shown us anything, it is that by working together with creativity, courage, and community, we can empower our coastal cities to face the future with confidence."

Dr. Salem Gharbia, SCORE Project Coordinator, ATU

END

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About SCORE

SCORE (Smart Control of Climate Resilience in European Coastal Cities) is an ambitious research and innovation initiative funded under the Horizon 2020 framework with the aim of strengthening climate resilience in European coastal cities.

In response to the growing threats posed by climate change, such as extreme weather events, coastal erosion, and sea-level rise, SCORE has integrated SMART technologies, Nature-based Solutions and Living Labs to develop effective, scalable, and sustainable adaptation strategies. SCORE places a strong emphasis on Nature-based Solutions), which leverage natural processes to enhance coastal protection, improve biodiversity, and foster sustainable urban development. By combining these Nature-based Solutions with smart digital technologies, SCORE has enabled cities to enhance climate monitoring, prediction, and adaptation strategies.

To achieve this, SCORE has established a network of ten Coastal City Living Labs across seven countries. These living labs serve as collaborative platforms where local communities, researchers, policymakers, and businesses co-design and implement climate resilience solutions tailored to their specific geographic and socio-economic contexts.

28 partners

12 countries

01.07.21 31.06.25

10M euros

Our consortium

The SCORE consortium is coordinated by the Atlantic Technological University Sligo – ATU (Ireland) and brings together 28 world-leading organisations spread across 12 countries.

SCORE partners come from academia, local authorities, research institutions, and SMEs encompassing a wide range of skills, including environmental science and policy, climate modelling, citizen and social science, data management, coastal management and engineering, security, and technological aspects of smart sensing research.

Universities

Local Authorities

Research institutions

Network

SMEs

Key tools & platforms

We present below a selection of the key tools and platforms developed within the SCORE project.

Ecosystem-Based Adaptation (EBA)

≈ An **EBA Catalogue** helping users explore various EBA measures addressing climate change hazards through an interactive tool

≈ **Socio-economic assessment** of EBAs solutions

Living Labs (CCLLs)

≈ A **Living Labs methodology** and **co-creation toolkit** supporting stakeholders in navigating the co-creation process more effectively, reducing complexity and facilitating smoother collaboration.

Participatory and citizen science approaches

≈ A **Low-cost sensors catalogue** identifying cost-effective technologies that can be deployed in community-led climate adaptation initiatives

≈ **Massive Open Online Courses** on climate solutions

≈ **Geodesign Game & Minecraft games** simulating urban planning scenarios thanks to interactive gamification platforms

Financial resilience and risk management tools

≈ A **methodology for assessing climate risk** for European coastal cities and comparing their climate-related hazards

≈ A **qualitative risk assessment framework, financial resilience strategies** and **decision support tool** with regards to climate hazards for decision-makers

Technological solutions

≈ **Hazard flooding maps** and **long-term coastal erosion analysis** for the development of flood projection models and shoreline evolution

≈ The **SCORE ICT platform** integrating sensor data, geospatial information, and project results into a unified system.

≈ A **Digital Twin platform** creating virtual models of European coastal cities to assess climate risks and adaptation strategies.

≈ A **GIS-based early warning support system**: an AI-powered monitoring and alert system that continuously tracks and predicts extreme weather events

Discover all our tools and platforms

Coastal City
Living Labs concept

SCORE is based on the novel concept of a Coastal City Living Lab (CCLL) that expands Living Labs methodology and style to a specific vision for coastal cities and settlements. Living Labs are user-centred, open-innovation urban ecosystems, where both public and private participants partner to drive sustainable innovation.

Through an iterative feedback process, Living Labs ensure that solutions are continuously refined and adapted based on real-world conditions and user inputs. These ecosystems enable co-creation, rapid prototyping, and innovation scale-up, bridging the gap between research, policy, and practical application. Living Labs are designed to generate long-term economic, societal, environmental, and regulatory impact. The SCORE Coastal City Living Labs are based on the same concept, but focus specifically on co-designing and co-developing coastal city interventions and activities to address climate change adaptation and resilience issues. They aim to tackle challenges such as sea-level rise, coastal erosion or extreme weather events and their effects in nine European Coastal Cities and one in Türkiye.

Each SCORE CCLL followed a structured methodology to support its establishment, stakeholder engagement, and co-creation processes. They were developed using a flexible framework, ensuring project goals were achieved, while allowing for contextualisation to the local needs and priorities. The CCLL involved citizens, scientists, policy makers and other stakeholders. They learned from each other in different frontrunner and follower roles for specific activities, ensuring engagement, empowerment, and learning throughout the whole process.

Sligo IRELAND
Dublin IRELAND
Oeiras PORTUGAL
Oarsoaldea SPAIN
Benidorm SPAIN
Vilanova i la Geltrù SPAIN
Massa ITALY
Piran SLOVENIA
Samsun TURKEY
Gdańsk POLAND

Benidorm CCLL · Spain

Benidorm is a city of 75,000 inhabitants located on the Spanish Mediterranean coast. Its main economic activity is tourism, which contributes to its 400,000 inhabitants thanks to its extensive hospitality and leisure offerings. Furthermore, the city has two large sandy beaches (its main asset), which have suffered continuous degradation due to coastal erosion and the increase in storms.

Team

Universitat d'Alacant
Universidad de Alicante

Main climate hazards

Coastal erosion, Coastal and land flooding, extreme weather

Original vision

Become an international reference model city developing innovative and cost-efficient climate adaptation solutions based on reliable and accessible climate-related data, integrating all stakeholders to create a long-term plan toward environmentally sustainable, resilient coastal communities.

Highlights

Benidorm CCLL has carried out significant work diagnosing and developing solutions for the city in the context of climate change. Coastal erosion studies were conducted, analysing historical aerial images to measure changes in the shoreline over time. The evolution and intensification of storms were analysed, assessing their impact on the city. Based on this assessment, a series of nature-based solutions were proposed, which the City Council has welcomed with great interest, and some of which will be implemented in the coming years. These results have been published openly in high-impact scientific journals.

Furthermore, a diverse network of sensors was implemented to measure different climatic variables, enabling better coastal management. Video cameras were notably used to measure the shoreline evolution and tourist overcrowding in real time, drones and LiDAR to measure 3D morphological changes, and meteorological stations and tidal sensors to record environmental and oceanic changes.

Key takeaways

We hope that the work carried out by the Benidorm CCLL in SCORE will continue to be a key tool for climate adaptation in the city's future. Risk maps, projections, and proposed solutions have created a solid and useful information base for the development of future Climate Change Adaptation Plans, managing water and coastal resources, or mitigating risks caused by extreme weather events. The idea of the CCLL is to extrapolate this methodology to nearby cities so that they, too, have the right tools for climate adaptation.

"We have learned a lot over the four years of the project. […] it was a bit challenging to involve stakeholders, but we see the greater acceptance of the solutions, and our idea in the future is to scale up this methodology and solutions and replicate this in the neighbouring cities and expand our collaboration."

Ignacio Toledo Sepulcre, University of Alicante

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Find out more about this CCLL
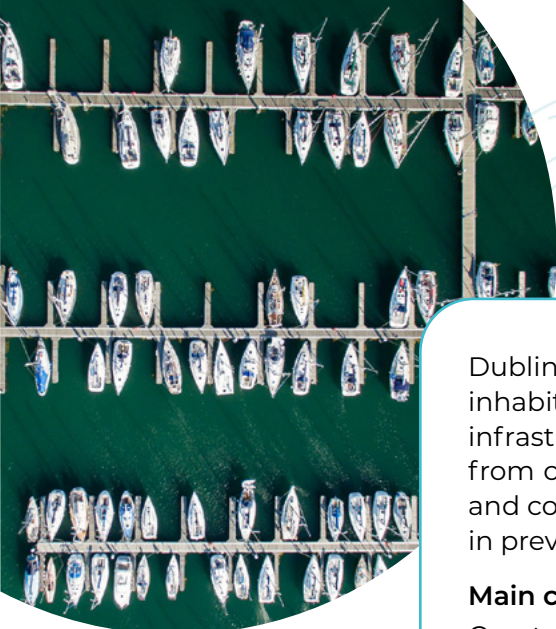
Dublin CCLL · Ireland

Dublin is Ireland's capital with around 2.1 million inhabitants and wraps around Dublin Bay. Key infrastructure, such as the DART train line, is at risk from coastal flooding and storm surge. Living Labs and co-creation spaces have been utilised in Dublin in previous projects.

Main climate hazards
Coastal erosion, flooding (coastal, land and pluvial), storm surges

Team

Original vision

Co-create data-driven policies using innovative EBAs and smart technologies to empower communities in building Dublin's coastal climate resilience

Highlights

The Dublin CCLL successfully created a citizen science framework for low-cost sensors using the SCORE Sensor Catalogue. Through stakeholder workshops, the CCLL engaged communities across Dun Laoghaire-Rathdown (DLR) County to select, onboard and deploy sensors for citizen-led climate monitoring. Building on this foundation, the CCLL adopted a multi-faceted engagement strategy, distributing smart citizen kits to homes, schools, and stakeholder buildings, while also installing environmental photo booths at beaches and lakes. These booths provide complementary visual data and invite the public to capture time-series images from fixed viewpoints, which are then uploaded to a geo-survey platform developed by the UCD team. This approach not only enhances data collection but also raises awareness and fosters a sense of shared responsibility. The research team also developed digital tools such as SCORE Map that integrates live data from all sensors, along with an immersive VR tool that enables policymakers and other stakeholders to visualise these datasets in an interactive 3D environment.

A standout innovation was the "smart pebbles" initiative, embedding radio-frequency identification tags into real stones to monitor coastal erosion in pebble beaches. This creative and interactive activity successfully engaged people of all ages and backgrounds, blending technology with public participation to promote coastal resilience.

Key takeaways

The Dublin CCLL experience highlights that citizen science thrives when inclusive engagement is paired with accessible, low-cost technology. Co-designing tools and platforms with communities not only enriches data quality but also builds local ownership and trust. Creative, place-based approaches like photo booths and smart pebbles can foster curiosity, long-term participation, and a shared sense of responsibility in tackling climate challenges.

"There have been many benefits to the DLR Water Pollution Control Section's partnership with the SCORE Project, but chief among them is the installation of water quality sensors at key locations across the County with the help and support of local community groups. This collaboration has sparked a pilot programme of real-time monitoring of what we're calling 'sleeping policemen' strategically placed in our rivers. The network of sensors will notify of events when they happen and thus greatly increase the probability of the source and polluter being found."

Paul Buggy,
Dun Laoghaire-Rathdown County Council

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Find out more about this CCLL

Gdańsk CCLL · Poland

Gdańsk is a port city with up to 487,000 inhabitants located on the Gulf of Gdańsk and situated at the mouth of the Motława River. The climate of the city is mainly shaped by air masses approaching from the North Atlantic Ocean. The city lies in a temperate warm climate zone with transitional features. It has a varied topography which ranges from an altitude of 0 m up to 180 m above sea level. The diverse location of the city affects both the spatial and temporal distribution of heavy rainfall and the occurrence of urban flash floods.

Team

University of Gdańsk

Main climate hazards

Pluvial flooding, extreme weather, coastal floods, sea-level rise

Original vision

Become a pioneer in Poland, establishing a strong network of stakeholders, able to raise awareness about climate change, and collaboratively work towards innovative solutions based on an orchestrated knowledge and experience exchange

Highlights

The Gdańsk CCLL has focused on an in-depth analysis of historical urban flash floods and extreme torrential rain events. The SCORE results (data collection, risk maps, projections) were the starting point for the evaluation of existing Ecosystem-Based Adaptations (EBAs) in the city. The conducted Multi-Criteria Analysis (MCA) was aimed at finding the most appropriate EBAs taking into account various selection criteria such as economic, environmental and social. The conducted workshops presented a possible direction of development for municipal institutions responsible for the adaptation of the city to climate change. Selected results of CCLL work have been published in high-ranking scientific journals.

Moreover, the Gdańsk CCLL has deployed the sensors network in order to monitor both water levels in the Kołobrzeski Stream and different climatic variables in selected hot-spots. For community engagement, the CCLL organized numerous classes for children, teenagers and students to raise awareness of climate change and promote EBAs. The citizen science activities were supported by the citizens and key municipality's actors.

Key takeaways

The Gdańsk CCLL has connected residents and various city stakeholders to promote the EBAs to mitigate risks of urban flash floods. The source of success was to be open to the different needs of the stakeholders and using different tools to engage more end-users. The results of the SCORE project, and in particular from the Multi-Criteria Analysis, are expanded through the implementation of the PRO-CLIMATE Horizon Europe project which supports the long-term sustainability of Gdańsk CCLL.
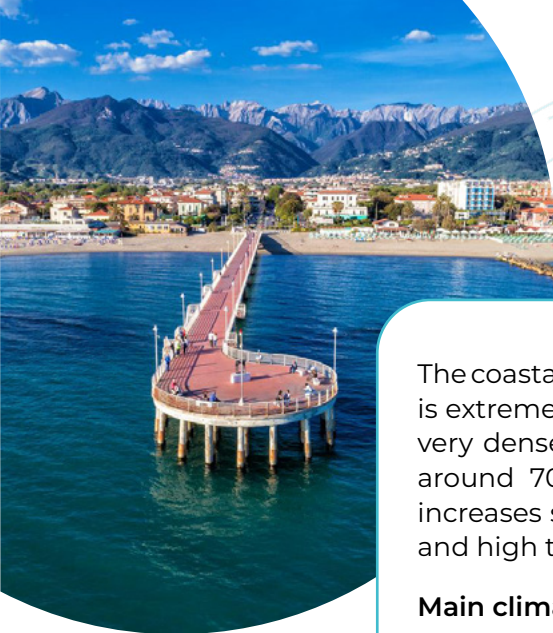
"We had the vision that we want to last forever. We want to have new projects, not only SCORE, but other activities which will be closely linked to the SCORE project."

**Katarzyna Barańczuk,
University of Gdańsk**

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Find out more about this CCLL

Massa CCLL · Italy

The coastal area of the Municipality of Massa is extremely hydro-geologically fragile and very densely populated. Massa is home to around 70,000 permanent residents but increases significantly during the summer and high touristic season months.

Main climate hazards

Coastal erosion, pluvial flooding, heat waves, extreme weather, storm surges, sea-level rise

Team

UNIVERSITÀ DI PISA

Consiglio Nazionale delle Ricerche

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CONSORZIO LaMMA

mbi

Original vision

Develop an inclusive open lab, meaningfully co-designing feasible science-based innovative climate adaptation solutions that leads to collaborative synergies between all stakeholders toward achieving social, economic and environmental resilience for coastal communities in and around Massa

Highlights

The Massa CCLL served as a key pilot site for the implementation of SCORE's Digital Twin and Early Warning Support (DT-EWS) System. This system was designed to help municipalities monitor real-time conditions, simulate extreme weather events, and assess potential flood impacts. It aimed to improve urban resilience by providing an integrated platform that combines predictive modelling with real-time data from sensors and weather forecasts. The CCLL played a crucial role in supplying essential data to the DT-EWS development team, such as high-resolution maps, land use information, river geometry, and climate data. Once operational, the DT-EWS continuously took-up real-time data inputs from weather stations and hydrological sensors (including from SCORE sensors) in Massa, enabling the DT-EWS to generate flood risk projections and, when relevant, issue timely alerts to municipal authorities. Engaging local stakeholders early on proved critical for ensuring the system met the needs of target users, particularly the city's urban planners and civil protection agencies.

Key takeaways

Massa's experience demonstrated the value of a co-design approach, where feedback loops between developers and users helped refine the system's usability and effectiveness. Massa's deployment of the DT-EWS set the stage for its adoption in other coastal cities. By combining advanced simulations with real-time monitoring, the Digital Twin system has been implemented to improve flood preparedness and facilitate strategic urban planning. The choice of sensors was a very important and significant experience. Hydrometers and cameras were chosen to monitor the water level of some rivers and control storm surges, increasing the safety of the territory. The sensors were chosen with the maximum participation of the stakeholders from the Municipality of Massa, clearly demonstrating how participatory processes can be of help to the authorities in the field of increasing the resilience and safety of the territory.

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"A big success is the network that was established. Those connections are not simple connections, they can stay after SCORE or for life. The ground is laid, not only within the CCLL [...] but with the other CCLLs."

Michele Sacco, LaMMA Consortium

Find out more about this CCLL

Oarsoaldea CCLL · Spain

Oarsoaldea CCLL has around 70,000 inhabitants and is a fragile territory with regards to climate change, with Pasaia port at an increasing risk of suffering economic losses and the Basque coastline having many forests and green protected areas that are at risk with increasing wildfires.

Main climate hazards

Coastal and river flooding, sea-level rise, coastal storms and storm surges, landslides and heat waves.

Team

Original vision

Become a reference in ecosystem-based solutions and coastal adaptation in the Basque Country, through enhanced engagement of key stakeholders and citizens participation.

Highlights

The Oarsoaldea CCLL tackled key climate change challenges in the region by involving a wide range of stakeholders and using the Living Lab approach. Using the SCORE methodology, the team identified the best Ecosystem-Based Adaptations (EBAs) for the area, and each of the four municipalities in the region applied one. The team also created useful technical tools and data for planners and decision-makers, such as estimating the economic risks of climate-related floods and the benefits of using EBAs. One cost-benefit analysis of an existing EBA shows how such solutions can reduce risks and support climate adaptation, helping both experts and the public understand their value.

Several sensors were installed—such as weather stations, water quality sensors, and environmental monitoring sites—and many people, including citizens, students, researchers, and businesses, took part in different activities. Using the data from these sensors and models developed for Oarsoaldea, the Digital Twin will help simulate future scenarios and test new actions. This will support the development of more nature-based solutions in the region.

"Our place among public administrations at different levels, citizens and other actors, allows us to develop the interconnection and coordination necessary to successfully achieve different results."

Xabier Sesma Korta, Oarsoaldea Development Agency

Key takeaways

To tackle today's and tomorrow's challenges, it is essential to involve different people and sectors in decision-making and solution design. Moving forward, the Oarsoaldea CCLL will build on the work started in the SCORE project by joining more environmental projects and discussions. The goal is to make the region more sustainable and improve quality of life for its residents.

"Regularly using communication channels between the more technical and the more co-ordinating/social parts of the project are essential to guarantee collaborative work and an accessible and understandable language for all partners."

Sara Soloaga, NAIDER

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Find out more about this CCLL

Oeiras CCLL · Portugal

Context

Located within the Lisbon Metropolitan Area, Oeiras is a coastal municipality positioned at the confluence of the Tagus River and the Atlantic Ocean. Covering an area of 45.88 km2 and home to 171 658 inhabits, Oeiras' territory is characterized by a network of valleys and elevated areas, shaped by several watercourses flowing from north to south. In recent years, Oeiras has experienced growing climate-related challenges, highlighting the municipality's exposure and the need to enhance climate resilience.

Team

OEIRAS VALLEY PORTUGAL
MUNICÍPIO OEIRAS

IST-ID
Associação do Instituto Superior Técnico para a Investigação e Desenvolvimento

Main climate hazards   Floods, Coastal floods and wave overtopping, Temperature extreme events, Water availability

Original vision

Co-create an inclusive climate action community through active stakeholder engagement and foster citizen awareness for the climate resilience of Oeiras.

Highlights

The Oeiras CCLL (Oeiras Municipality and IST-ID) exemplifies effective collaboration among municipal authorities, academic institutions, and civil protection services in deploying citizen science initiatives to enhance climate resilience. Oeiras focused on co-monitoring and co-creation efforts by involving local schools and universities in climate risk monitoring. During participatory workshops, Oeiras stakeholders, supported by the SCORE sensor catalogue, identified meteorological and hydrological sensors and installed them across 11 strategic locations. The Oeiras CCLL team's adaptive approach, incorporating alternative sensors in response to the municipality's specific needs, underscored the importance of flexibility in technology deployment. A key achievement was the integration of these sensors into the existing municipal infrastructure, enabling real-time data collection to support civil protection services in management flood risks. This initiative enhanced Oeiras's climate response capacity, fostered community ownership, and embedded environmental monitoring into education, serving as a model for building resilient coastal communities.

Key takeaways

The Oeiras CCLL strengthened community engagement, fostered environmental education, and built capacity across municipal services through citizen science and strategic partnerships. Participation in SCORE reinforced the municipality's commitment to climate resilience, laying a solid foundation to sustain and expand co-creation activities and local climate strategies beyond the project.

"It was great to have the university because they have the scientific knowledge, the scientific point of view of the project, and the municipality has the important connection with the schools. So, both the scientific and the practical."

Teresa Carmo Vaz, Oeiras Municipality

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Find out more about this CCLL

Piran CCLL · Slovenia

Context

The historic Piran town centre on the peninsula has about 800 permanent residents, with 18,500 across the municipality. Piran attracts many summer tourists leading to increased demand for fresh water, straining the already scarce supply from the water-providing Rižana River, which supplies water to the whole of Slovenian coastside and is vulnerable to water scarcity and pollution.

Team

Main climate hazards

Coastal flooding, drought, heat waves, storm surges, sea-level rise.

Original vision

Become a pioneer in Slovenia in co-creating innovative solutions by empowering the citizens and stakeholders to collaborate in the context of climate change prevention, adaptation and mitigation.

Highlights

Piran served as a leading example of successfully implementing the Multi-Criteria Analysis (MCA) framework, which was developed by SCORE to allow stakeholders in each CCLL to prioritize Ecosystem-Based Adaptation (EBAs) in their local area, based on their economic, social, and environmental value.

Through this process, Piran CCLL prioritised rainwater collection through historic cisterns and emphasised the importance of existing traditional practices, such as water-permeable stone pavements and dry-stone wall techniques (supporting water retainment and stabilizing the soils) to be implemented in small patches of available green areas (typical terraced gardens and olive groves). Notably, the selected EBAs were different than initially identified in the project planning, showing the crucial value of stakeholder input. The engagement of knowledgeable citizens, conservation experts and historians further enriched the decision-making process, ensuring that climate adaptation measures aligned with cultural preservation goals.

Key takeaways

The work in Piran engaged authorities, historians, and citizens, fostering renewed interest in the town's heritage while enhancing climate resilience and maintaining its tourist appeal. It showed the importance of tailoring EBA strategies to the specific geographical, social, and cultural context. While nature-based solutions are widely recognised for their environmental benefits, their successful implementation depends on community engagement and historical continuity, making Living Labs the key environment to engage with these activities.

"To make the area more resilient to climate change while preserving its cultural and historical value, we first need to actively restore traditional nature-based features like terraced gardens, cisterns, stone pavements, and dry-stone walls. The next step is to link these features together and upgrade the underground sewer and drainage systems. Together, these actions will help manage heavy rainfall and reduce damage from coastal flooding."

Cécil Meulenberg, ZRS

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Find out more about this CCLL

Samsun CCLL · Turkey

Context

Samsun has up to 600,000 inhabitants. Samsun's coastal region is a key natural site, the landscape is extremely flat and surrounded by wetlands with rich biodiversity. Samsun has a substantial agriculture, which is a key part of it's the city's economy.

Team

Main climate hazards
Coastal erosion, land and pluvial flooding, extreme weather

Original vision

A self-sustaining Coastal City Living Lab implementing a roadmap of cooperation among all stakeholders to plan, design and scale up nature-based solutions toward social, economic, and environmental resilience of the communities living on the Kızılırmak Basin.

Highlights

The Samsun CCLL focused on flood risk assessment and community resilience in the Kızılırmak Delta, one of the most vulnerable coastal regions in Türkiye. To understand and manage flood risks, 2D hydrodynamic modelling was carried out under historical and climate change scenarios. This analysis was supported by real-time data collected from existing meteorological and hydrological stations. Guided by the SCORE sensor catalogue, citizen science-friendly meteorological sensors were installed at 14 different locations, enabling continuous monitoring and providing critical inputs for scenario analysis. Citizens contributed to risk mapping and environmental data collection, strengthening local knowledge and fostering a sense of ownership. Additionally, the CCLL piloted nature-based solutions—such as wetland restoration and green buffer zones— in order to reduce flood impacts while preserving the ecological integrity of the Delta.

These efforts were summarized in a policy brief entitled "*Enhancing Flood Resilience in Samsun through Nature-Based Solutions and Community-Based Monitoring*," which was presented to local authorities. The outputs and tools developed by the CCLL have begun to inform local adaptation planning and serve as a model for other coastal cities in Türkiye facing similar challenges.

Key takeaways

The Samsun CCLL has brought together citizens, local institutions, and technical stakeholders to promote nature-based solutions for managing flood risks. One of the key strengths of the initiative is its sensitivity to diverse local needs and its flexible approach to community engagement, combining environmental education, participatory monitoring, and context-specific technical tools. Samsun CCLL is now exploring new partnerships and funding opportunities to ensure its long-term impact and integration into regional climate adaptation efforts.

"The ultimate goal is for the CCLL to operate independently from me and my team. A CCLL should be able to sustain itself, grow and evolve without our direction anymore. This means empowering them to take on leadership roles in the management board"

Neslihan Beden, Samsun University

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Find out more about this CCLL

Sligo CCLL · Ireland

Context

Sligo County, located in the northwest of Ireland, is home to 65,000 inhabitants, concentrated mostly in Sligo town and along the coastal countryside. There are several strands and beaches vulnerable to the impacts of climate change, such as Enniscrone and Streedagh beaches.

Team

Main climate hazards
Coastal and dune erosion, coastal flooding, storm surges

Original vision

Build an enduring and self-sustaining citizen science coastal cooperative integrated in Ireland's northwest to co-create inclusive and innovative approaches toward ecologically sustainable climate solutions and resilience of coastal communities.

Highlights

In Sligo, shoreline erosion studies were conducted, analysing historical satellite images to track shoreline changes over time. To improve accuracy, drone surveys and the *SCORE Photobooth Coastal Initiative* were introduced. This initiative, co-developed with Dublin CCLL, allowed citizens to contribute real-time shoreline images, creating a unique dataset that enhances scientific research.

Using advanced hydrodynamic models, Sligo also simulated storm surges and predicted extreme sea levels. These models are supported by locally-deployed water level sensors that provide real-time monitoring of sea levels. The collected data is accessible through a mobile app, making it easier for citizens and stakeholders to track flooding risks.

Sligo CCLL has published a policy brief "Building climate resilience in Sligo County through ecosystem-based adaptation, smart technologies, and coastal city living lab" to support decision-makers in defining their local climate adaptation strategy. It was presented to the Sligo County Council in Fall 2023 and the project is now featured in the Climate Action Plan for Sligo.

Key takeaways

By integrating multiple data sources, satellite imagery, drone surveys, low-cost sensors, and citizen science, Sligo CCLL has developed a comprehensive coastal monitoring system. This approach provides policymakers, urban planners, and researchers with accurate, real-time data to support climate resilience and sustainable coastal management.

"The main thing is communication, engagement, development of relationships [...] That engagement piece, that relationship piece, it's so important, because if you don't have that, it's not really going to work."

Pete Murtagh, Sligo County Council

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Find out more about this CCLL

Vilanova i la Geltrú CCLL · Spain

Vilanova i la Geltrú is a Mediterranean city with a population of around 70,000. The city is surrounded by a green/blue ring, formed by sea wetlands, a marine protected area, and the Natural Park of Garraf.

Main climate hazards

Coastal erosion and inland flooding, drought, heat waves, sea-level rise.

Team

Original vision

To become a reference and research-technological engine, co-creating data-based, innovative, and collaborative solutions toward integrated coastal management and climate change adaptation, scaled up to Catalunya and the Mediterranean area.

Highlights

Vilanova CCLL was essential in the development of two SCORE key results, financial risk profiles and a Decision Support System (DSS) helping municipalities assess climate-related risks and make informed financial planning decisions. The risk profiles included an overview of how Ecosystem-based Approaches (EBA) might mitigate climate risks and associated costs, while the DSS integrated these findings into a single platform, to support municipal decision-making and evaluate various financial strategies tailored to the specific risk landscape of the CCLLs. The inclusion of the CCLL and local partners was essential in getting the tools to a useful and contextualised place. Co-creation sessions with municipal representatives emphasized the importance of visualising financial impacts in an accessible format, leading to refinements in the accessibility and usability of the DSS. The EBAs incorporated into the risk profiles were selected during further co-creation sessions with local stakeholders, ensuring that solutions reflected regional priorities and constraints.

Key takeaways

The experience in Vilanova i la Geltrú underlines several key takeaways for other cities looking to implement similar technologies. Early stakeholder engagement ensures that risk assessment tools are tailored to local needs, while training municipal staff in using tools and interpreting outputs enhances the effectiveness of decision-making. By leveraging co-creation and data-driven insights, the Vilanova i la Geltrú CCLL has set a strong precedent for other coastal cities seeking to enhance resilience in the face of climate change challenges.

"We have three different institutions, so it gives us a different perspective, different skills, so when you bring them all together, it allows us to achieve different results."

Mar Riera Spiegelhalder, Serveis de Suport a la Gestió (ENT)

"Our role in city councils is to put together people and to put together initiatives to make something bigger"

Ester Toledo, Vilanova i la Geltrú City Council

Contact

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Find out more about this CCLL

A few key numbers

60+ scientific publications

60+ events attended

11 policy briefs

1200+ people enrolled in the SCORE online courses

640 participants attended our 10 webinars

3 climate adaptation training schools
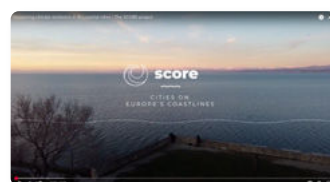
Promotional materials

SCORE Logo

Download the logo

5 Infographics – How can Ecosystem-based Approaches help?

See the documents

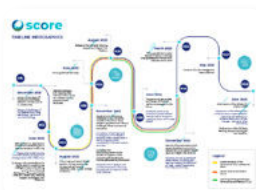## SCORE Video: Increasing climate resilience in EU coastal cities

Watch the video

Final SCORE brochure with key results

See the brochure

Timeline of the SCORE project

See the timeline

Photo **Gallery**

Dublin

View of Dun Laoghaire's harbour piers

Students installing smart pebbles to monitor coastal erosion

Sligo

View of Enniscrone beach

View of Streedagh beach

Piran

Dry stone walls in Piran

View of the town of Piran

Samsun

View of Samsun

View of the Delta

Massa

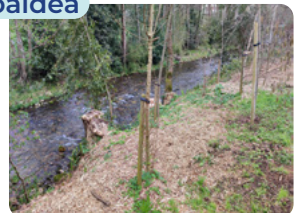Torre Fiat in Massa where a SCORE camera monitors the tides

View of Massa
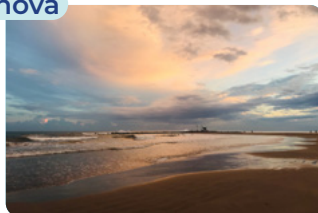
Oarsoaldea

View of the mouth of Pasaia Bay

Riverbank recovery: planting native tree and shrub species

Vilanova

Platja del Far in Vilanov
©Vilanova i la Geltrú City Council

Platja de Ribes Roges
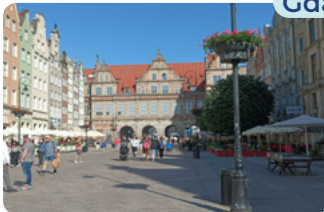©Vilanova i la Geltru City Council

Benidorm

View of Benidorm
©Alejo Bagué

Virtual representation of ecosystem-based approaches in Benidorm
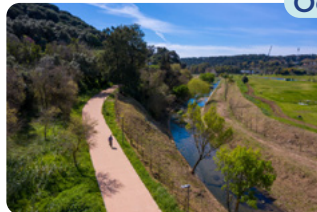
Gdańsk

View of Gdańsk city center

Study visit in Gdańsk

Oeiras

Green corridors in Oeiras.
©Oeiras Municipality Communication Office

Forte São Julião da Barra in Oeiras
©Oeiras Municipality - Communication Office

Further pictures can be made available upon request.

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See the online version of our press kit