# Med-IREN project pioneers circular economy to boost Mediterranean climate resilience



The Mediterranean region stands at a critical juncture, marked by escalating climate crises that threaten its diverse ecosystems and the livelihoods of millions. Thanasis Sfetsos, Research Director at the National Centre for Scientific Research “DEMOKRITOS,” emphasises the urgent need for transformative approaches to address these challenges. At the forefront of this movement is the Med-IREN project, which seeks to leverage innovative circular economy principles to foster climate resilience across the Mediterranean.

Climate impacts such as rising temperatures, prolonged droughts, intense flooding, and rampant wildfires have increasingly become the norm in the Mediterranean. These environmental shifts significantly endanger local communities, critical infrastructure, and existing ecosystems. In light of this, the traditional linear "take-make-dispose" economic model is being called into question, as it accelerates environmental degradation and compromises sustainability. Transitioning to a circular economy, which centres on resource regeneration and waste minimisation, is posited as a viable pathway to long-term prosperity while respecting the planet's ecological limits.

A key component of this paradigm shift is the adoption of Nature-based Solutions (NbS), which harness natural processes to provide multifaceted benefits for both people and nature. NbS encompasses a range of strategies such as restoring wetlands, greening urban environments, and enhancing coastal ecosystems. These strategies not only combat climate impacts but also promote biodiversity, improve air quality, and enhance community well-being. By integrating ecological principles into economic planning and infrastructure development, societies can create adaptive systems that mitigate the effects of climate extremes while fostering social cohesion and economic growth.

The Med-IREN project, initiated in 2024 as part of the EU Mission on Adaptation to Climate Change, exemplifies this shift towards nature-inspired, circular solutions. By focusing on five Mediterranean regions—Spain, France, Italy, Greece, and Cyprus—Med-IREN serves as a living laboratory to demonstrate how ecosystem-based interventions can fortify communities against climate-related risks. The project's unique approach melds scientific research with local implementation, encouraging collaborative efforts among communities, businesses, and governmental bodies to ensure an inclusive and just transition to sustainable practices.

Central to Med-IREN's philosophy is the belief that infrastructure resilience cannot merely rely on conventional methods. For example, in Tuscany, local partners are employing recycled gravel from quarry waste to create natural coastal protections, absorbing wave energy and alleviating coastal erosion—a solution that also enhances the region's aesthetic appeal. This innovative combination of NbS with traditional engineering techniques reflects a broader commitment to integrating sustainable practices into existing systems, enhancing overall resilience while maintaining the integrity of local landscapes.

The project also aims to replicate its successful strategies across additional EU regions—including Cyprus, Bulgaria, and Finland—demonstrating the scalability of nature-centric approaches in diverse geographic contexts. As Med-IREN progresses, it seeks to establish best practices for climate-proofing critical infrastructures in varying conditions, ensuring that lessons learned are broadly applicable.

The emphasis on community engagement further enriches Med-IREN's framework. The project advocates for participatory governance, recognising that local input and stakeholder collaboration are vital for creating effective, durable solutions. In essence, Med-IREN transcends a purely technical focus, presenting a model where circularity inherently includes social equity—as preserving natural systems directly correlates with safeguarding lives and livelihoods.

As the Mediterranean grapples with unprecedented climate challenges, initiatives like Med-IREN position themselves as beacons of hope, demonstrating how the synthesis of nature-based solutions and circular economy principles can forge a sustainable, resilient future. By reimagining our relationship with the environment, we not only protect natural ecosystems but also redefine economic success to encompass both ecological health and community prosperity.

In conclusion, the Med-IREN project exemplifies how circular solutions grounded in nature can address the multifaceted challenges posed by climate change in the Mediterranean. As these innovative approaches gain traction, they hold the potential to transform not just infrastructures, but the very fabric of societal resilience across the region.

### Reference Map

1. Paragraph 1: [[1]](https://www.circularonline.co.uk/insight/circular-solutions-for-climate-change-in-the-mediterranean/)
2. Paragraph 2: [[1]](https://www.circularonline.co.uk/insight/circular-solutions-for-climate-change-in-the-mediterranean/)
3. Paragraph 3: [[1]](https://www.circularonline.co.uk/insight/circular-solutions-for-climate-change-in-the-mediterranean/)
4. Paragraph 4: [[2]](https://www.med-iren.eu/), [[3]](https://cordis.europa.eu/project/id/101157707)
5. Paragraph 5: [[4]](https://www.cmcc.it/projects/med-iren-mediterranean-critical-infrastructure-resilience-engineering-with-nature-based-solutions-med-iren), [[5]](https://iucn.org/our-work/region/mediterranean/our-work/nature-based-solutions-and-climate-change)
6. Paragraph 6: [[6]](https://planbleu.org/en/publications/factsheet-on-nature-based-solutions-in-mediterranean-coastal-zones/)

Source: [Noah Wire Services](https://www.noahwire.com)

## Bibliography

1. <https://www.circularonline.co.uk/insight/circular-solutions-for-climate-change-in-the-mediterranean/> - Please view link - unable to able to access data
2. <https://www.med-iren.eu/> - The Med-IREN project aims to protect local communities and businesses from climate extreme events across the Mediterranean region. By combining nature-inspired solutions with engineering practices, the project seeks to safeguard societies from flooding, wildfires, and other climate hazards that threaten critical sectors, such as transport and energy. The project will be showcased in five regions across the Mediterranean, and the solutions and interventions will be replicated into four regions across the EU. Med-IREN will also demonstrate key factors for upscaling and replicating these mechanisms within Mediterranean regions and beyond.
3. <https://cordis.europa.eu/project/id/101157707> - The Med-IREN project aims to provide actionable demonstration on how to climate proof the Mediterranean critical infrastructures, across critical sectors, by introducing Nature-Based Solutions (NBS) both in terms of improving climate risk management and sustaining their business continuity to extreme climate change. The project will be showcased in five lighthouse regions across the Mediterranean, each corresponding to a present-day challenge, that are aligned with regional policies and can constitute the EU as a global leader in the field. Med-IREN will cover different and diverse types of critical infrastructure (energy, transport, water, ICT, social), priority climate hazards within the Mediterranean, which is a climate hot-spot, and NBS interventions. In parallel, the interventions and solutions will be replicated into four more regions across the EU, covering the Mediterranean, Black Sea, and Boreal regions. Med-IREN will also provide evidence how key enabling conditions, such as participatory governance and citizen engagement, novel forms of financing, innovative urban/landscape planning, and capacity building will support regional systemic transformation and provide the upscaling and replication mechanism within Mediterranean regions and beyond.
4. <https://www.cmcc.it/projects/med-iren-mediterranean-critical-infrastructure-resilience-engineering-with-nature-based-solutions-med-iren> - The Med-IREN project is strategically designed to demonstrate actionable solutions for climate-proofing critical infrastructures across the Mediterranean, with a particular focus on enhancing resilience through Nature-Based Solutions (NBS). These solutions will be applied to improve climate risk management and ensure business continuity in the face of extreme climate change. The project will be implemented in five key lighthouse regions across the Mediterranean (Granollers, PACA, Ischia, Tuscany, Egaleo), each addressing a specific, present-day challenge. These regions will align with regional policies, further contributing to the EU’s position as a global leader in climate resilience. Moreover, the project will leverage Dataclime, CMCC’s advanced climate service platform, to provide cutting-edge data and analytics for real-time monitoring and risk assessment, ensuring that the project’s impact is grounded in the most up-to-date scientific evidence and fostering actionable insights for stakeholders.
5. <https://iucn.org/our-work/region/mediterranean/our-work/nature-based-solutions-and-climate-change> - Nature-based Solutions (NbS) implemented in the Mediterranean through restoration and improving conservation of ecosystems such as forests, wetlands, and seagrass meadows, can help communities to address the climate and biodiversity crisis and societal needs in a post-COVID-19 era. Forests and other types of vegetation help lower air temperature in urban areas or stabilize slopes. Wetlands can regulate floods and sea level rise. Coastal vegetation and natural features such as sand dunes and Posidonia-beach systems can provide protection against storm surges and strong winds. Agro-biodiversity practices can enhance food production. Nature-based Solutions also aim to generate local employment and new economic opportunities in a fair and equitable way.
6. <https://planbleu.org/en/publications/factsheet-on-nature-based-solutions-in-mediterranean-coastal-zones/> - Marine and coastal areas of the Mediterranean are home to some of the most vulnerable ecosystems to the effects of climate change and human activities such as unsustainable tourism, fishing, and pollution. About one third of the Mediterranean population is concentrated along its coastal regions, resulting in more than 250 million people being particularly exposed to the effects of climate change that include sea level and temperature rise, sea acidification, and increased frequency of extreme weather events. Nature-based Solutions (NbS) can combine climate change mitigation and adaptation, biodiversity conservation, and sustainable resource management, for the benefit of coastal communities and can be applied at a landscape or seascape level, and can be implemented alone or in an integrated manner with other solutions. This factsheet has been produced by the MBPC project with the support of the partners of the Interreg MED MBPC modular projects and provides a description of the NbS type focus type and definition as an introduction. Moreover, four categories of actions are described which are: actions to protect/restore “blue carbon” sinks; actions to strengthen ecosystem resilience; actions to implement and/or foster sustainable fishing practices; actions to establish and/or conserve coastal zone setbacks.