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Gran Canaria's public leadership at the forefront of climate adaptation: driving action through initiative, financing and coordination

Strengthening resilience and restoring ecosystems through publicly supported Nature-based Solutions

The Cabildo de Gran Canaria authority successfully led innovative nature-based restoration efforts, enhancing ecosystem resilience across diverse environments, from coastal dunes to subtropical forests, and delivering tangible benefits to local communities.

Key Learnings

- **Strong public leadership is crucial:** Gran Canaria's representative authority's proactive coordination, financing, and multi-stakeholder collaboration, like involving local schools, nurseries and volunteers have been key to implementing effective climate adaptation actions across the island. Raising awareness among several stakeholders and ensuring long-term support has proven successful.
- **Tailored Nature-Based Solutions increase effectiveness:** Restoration techniques addressing specific local challenges, such as coastal dune stabilisation and semi-arid subtropical forest recovery enhance ecosystem resilience and climate risk reduction.
- **Innovation amplifies impact:** Advanced technologies, including fog water harvesting systems and strategic sand relocation, have improved water efficiency, vegetation survival rates, and ecosystem stability beyond conventional methods.
- **Replication potential:** Gran Canaria's integrated, complementary approaches provide scalable models for other regions facing similar climate challenges.

About the region

Gran Canaria, the third-largest island in the Canarian archipelago, is a Spanish territory located in the Atlantic Ocean, about 1,100 km off the Iberian Peninsula. This volcanic island covers approximately 1,560 km² and hosts a population of 863,943 inhabitants. Gran Canaria's unique geography creates a remarkable diversity of microclimates across the island. The north is cooler and wetter, while the south, especially along the coast, is warmer with predominantly dry, sunny weather. In contrast, the midlands and mountain peaks form a distinct landscape, where the island's highest elevations trap clouds, producing a cooler, more humid climate that nurtures lush forests and subtropical valleys. Despite these local contrasts, the island as a whole enjoys a mild, spring-like climate year-round, with average temperatures between 18°C and 25°C. This stable weather, combined with its rich ecosystems and cultural heritage, attracts between three and five million visitors annually.

Climate Hazards

Extreme Heat, Droughts, Flooding, Sea Level Rise

Sector

Biodiversity protection, Coastal Areas, Water Management

Key System

Water Management, Ecosystem and Nature Based Solutions



Figure 1: Location of Gran Canaria. Image Credit: [Britannica](#).

Climate Threats

Gran Canaria faces growing climate risks, with extreme heatwaves and droughts among its biggest challenges. Heatwaves, already more frequent, will become even hotter and more common, with average temperatures increasing by about 1.2 to 1.3°C by 2050. Droughts will become longer and more severe, varying by region. In the north, they will become more frequent, while in the south and east, they will be less but harsher. Although rainfall may only slightly decrease, the island's soil, steep terrain, and sparse vegetation will amplify the risk of flooding. Rising sea levels and coastal erosion will also cause lasting changes along Gran Canaria's shorelines, affecting limited areas but potentially forcing community relocations. Experts estimate that around 500 people across the Canary Islands may need to relocate by 2050, increasing to over 5,000 by 2100. Flooding could affect approximately 1% of the population by 2050 and 2% by 2100. At the same time, mass tourism and urban growth continue to strain natural resources and worsen land degradation, further intensifying these risks.

Public leadership in climate action

The [Cabildo of Gran Canaria](#), as the island's highest governing authority, has shown a clear commitment to strategic climate planning and coordination. It works across its own departments and with the 21 municipalities through the Sustainable Energy and Climate Action Plans (SECAPs) of the Covenant of Mayors, while also promoting projects supported by both European and local funding. This integrated approach reflects its political will to strengthen resilience, foster collaboration, and advance a sustainable future for the island.

Building on this foundation, the Cabildo took a major step forward in 2022 when it made Gran Canaria the first island in the Canarian archipelago to adopt a dedicated climate change adaptation strategy through its Regional Council for the Environment, Climate, Energy and Knowledge. Establishing a dedicated commission within the Cabildo to coordinate adaptation policies, as well as the joint design of climate solutions with citizens and stakeholders, reinforced the strategy. Examples include initiatives such as the Horizon [NATALIE](#) project, which is developing a Sustainable Urban Drainage System to manage rainwater by mimicking natural processes in Maspalomas, alongside other adaptation projects implemented across the island.

To deliver these initiatives, the Cabildo has actively partnered with several actors to protect ecosystems and safeguard the island's socio-economic stability, particularly in forested areas and along the coast. Within academia and research, collaborations have included the University of La Laguna (ULL), the Autonomous University of Barcelona (UAB), the University of Las Palmas de Gran Canaria (ULPGC), and the Ecological and Forestry Applications Research Centre (CREAF). The Cabildo has also worked with public enterprises and technical institutes such as GESPLAN, Heredad de Aguas de Arucas y Firga, the Canary Islands Institute of Technology (ITC), and the Canary Islands Institute of Agricultural Research (ICIA). Engagement has also extended to local authorities and civil society, most notably the Municipality of San Bartolomé de Tirajana and the Intermunicipal Community of Viseu Dão Lafões (CIM VDL, Portugal), as well as nurseries, schools, and community organisations across the island.

These collaborations and measures, ranging from strategic planning to institutional mechanisms and on-the-ground projects, embed knowledge and expertise while reflecting a systemic effort to mainstream adaptation, delivering practical and replicable responses to the climate crisis.

Nature-Based Solutions on land and coast

Nature-based Solutions lie at the heart of Gran Canaria's climate adaptation strategy, providing key benefits for biodiversity, urban planning, tourism, disaster risk management, agriculture, and water management. To support this, the Cabildo and the Island Council for Energy have taken direct action to restore and protect vital ecosystems across inland and coastal zones. Two of the most representative initiatives are [MASDUNAS](#), dedicated to the preservation of coastal dune systems, and [LIFE NIEBLAS](#), focused on inland forest recovery. The Cabildo fully financed MASDUNAS, while LIFE NIEBLAS received combined funding from the Cabildo, project partners, and the EU LIFE Programme. Throughout these efforts, the Cabildo has played a central role in leading, coordinating, and financing the interventions, ensuring their effective implementation and impact.

"Adaptation is not just a necessity – it is a duty. Gran Canaria has chosen to place nature and science at the heart of our adaptation strategy to drive meaningful, lasting impact. As islands, we serve as real testing grounds where Nature-based Solutions can be developed, scaled, and refined to address the climate crisis with both urgency and hope."

Raul Garcia Brink, Councillor for Environment, Climate, Energy and Knowledge – Cabildo of Gran Canaria

Through the 2020-2024 LIFE NIEBLAS project, the Cabildo authority restored forests in the Barranco de la Virgen, located in the municipality of Valleseco, the north-central part of the island. The initiative targeted ecosystem recovery in semi-arid and post-fire environments in this NATURA 2000 area. Working with a broad network of stakeholders – including GESPLAN, Heredad de Aguas de Arucas y Firgas, ITC, ULL, UAB, CREAM, and CIM VDL – the project team reforested over 18 hectares with more than 15,000 trees native to that specific area. They deployed innovative irrigation methods, including traditional hose-based systems, Cocoon biodegradable reservoirs, Individual Fog Water Collectors (Figure 2), and the Autonomous Fluid Discharge System, to maximise water efficiency and increase vegetation survival rates. These systems harvested over 121,902 litres of fog water and reduced carbon emissions by 50% compared to traditional approaches. As the forest matures, it is projected to sequester around 175 tonnes of CO₂ annually. Beyond ecological gains, the team strengthened outreach and knowledge transfer through collaborations with local nurseries, schools, and institutions.



Figure 2: Fog water collectors with metal needles. Image Credit: Cabildo de Gran Canaria/David Delfour.

As part of the MASDUNAS project, implemented in two phases (2018–2019 and 2021–2025), the Cabildo restored the Maspalomas Dunes nature reserve, located along the southern coast of the island, through a contract with the public enterprise GESPLAN and in collaboration with ULL and the Municipality of San Bartolomé de Tirajana. The project team relocated over 63,000 cubic meters of sand to rebuild natural dune formations. They planted 1,064 native *Traganum moquinii* shrubs and installed 5,919 wooden stakes to delineate and protect sensitive areas (Figure 3), supporting ecosystem recovery. They also removed over 1,150 cubic meters of invasive vegetation, greatly enhancing the ecological status of the reserve. Newly installed sand collectors (artificial structures designed to intercept and accumulate wind-blown sand) improved dune mobility and sediment retention. Together, these targeted interventions prevented more than 13,289 cubic meters of sand from drifting inland, significantly improving dune stability. To reduce human impact, reallocating tourist infrastructure and providing better trail guidance improved visitor management and successfully reduced human pressure on fragile zones.



Figure 3: Planting of a "balancón" (*Traganum moquinii*) in the Maspalomas Dunes Nature Reserve. Image Credit: Cabildo de Gran Canaria/David Delfour.

These government-led nature-based initiatives strategically address distinct yet interconnected climate vulnerabilities in Gran Canaria (e.g., coastal erosion along the southern dunes and drought and fire risks in the island's interior forests). Restoring the Maspalomas Dunes reinforced the island's natural coastal buffer against sea level rise and extreme weather, while reforestation efforts in areas like Barranco de la Virgen improve water retention, reduce soil degradation, and increase carbon sequestration inland. Together, these complementary actions create a holistic approach that strengthens multiple ecosystem functions across varied landscapes.

The approaches tested in Gran Canaria's nature-based projects show strong potential for adaptation and replication in other regions facing similar climate challenges. For instance, the Masdunas project developed and tested a coastal dune planting protocol that achieved a 90% survival rate for *Traganum moquinii* during its second phase. By combining vegetation planting with sand collectors, the project created a first reference point for advancing ecological restoration in arid dune systems. Likewise, the LIFE NIEBLAS project enhanced forest cover CO₂ capture through cost-effective and replicable reforestation strategies. It demonstrated the effectiveness of innovative irrigation methods, with Individual Fog Water Collectors and the Autonomous Fluid Discharge System achieving vegetation survival rates of 74% and 86% respectively, compared to just 33% with traditional techniques. The system irrigates plantations by combining fog water and natural sources without any energy input. The activities have resulted in a global

knowledge exchange network, generating interest and opportunities for replication in locations including Cape Verde, Chile, Italy, Catalonia, and other Canary Islands, ensuring that lessons learned extend beyond Gran Canaria.

A valuable blueprint

Gran Canaria's approach showcases the transformative power of public leadership in advancing Nature-based Solutions for climate adaptation. By acting early, coordinating cross-sector partners, and investing in long-term ecological restoration, the Cabildo authority has positioned the island as a leader in climate resilience. From fog water harvesting in the central north to dune restoration in the south, their work proves that local governments can drive impactful responses to climate challenges.

Building on these efforts, several other nature-based projects are underway across the island to further strengthen Gran Canaria's climate resilience. Among them are LIFE COSTAdapta, which focuses on further protecting and restoring vulnerable coastal areas affected by sea level rise and erosion; and Gran Canaria MOSAICO, addressing wildfire prevention through landscape restoration, reforestation, and sustainable land management. The Cabildo is now expanding these nature-based strategies to strengthen climate adaptation.

By actively collaborating with academic institutions, public enterprises, and local communities, these initiatives generated transferable knowledge and best practices, positioning Gran Canaria as a reference point for nature-based climate adaptation in comparable island and semi-arid environments, including other EU outermost regions. This model offers a valuable blueprint for other public authorities worldwide, showing how integrated, science-based, and community-engaged approaches can protect communities, restore ecosystems, and build long-term resilience in the face of intensifying climate risks.

Summary

Gran Canaria faces significant climate challenges, including heatwaves, droughts, and coastal erosion, which are intensified by urbanisation and tourism pressures. In response, the Cabildo has taken a leading role in driving climate adaptation efforts across the island. By prioritising strong public leadership, the Cabildo has successfully coordinated multi-stakeholder efforts involving local communities, schools, and multiple organisations from Spain and beyond. This approach has proven effective in raising awareness, securing long-term support, and fostering collaboration among diverse stakeholders.

Tailored Nature-based Solutions contributed to restoring ecosystems and enhancing the island's resilience. These initiatives reflect the Cabildo's commitment to innovation, from water-harvesting techniques to advanced restoration methods, all of which contribute to the island's natural defences, ecosystem health, and economic stability. Gran Canaria's experience demonstrates the importance of proactive, inclusive governance in addressing climate challenges and offers valuable lessons for other regions seeking scalable solutions to protect both ecosystems and communities.

Further information

- [Masdunas](#)
- [LIFE Nieblas](#)
- [LIFE COSTAdapta](#)
- [HORIZON NATALIE](#)
- [Gran Canaria MOSAICO](#)

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