

LAYMAN'S REPORT

Towards an integrated policy, coherent, and inclusive application of climate change adaptation in Navarre



Co-funded by
the European Union

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 **NILSA**

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The LIFE-IP NAdapta-CC project has received funding from the LIFE programme of the European Union.

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DL NA 2212-2025

Foreword

“How is it possible that the species with the greatest intellectual capacity in history is destroying its only home?” asked the English primatologist and anthropologist Jane Goodall, UN Messenger of Peace, who passed away this October at the age of 91. The question is simple, certainly, but essential as a starting point. Climate change is a symptom of this suicidal trend, yes, but also an opportunity to provide new responses: mitigating threats, adapting to the future, and transforming our environment. Goodall herself would remind us that many species have already followed a similar path in their evolutionary history.

The climate emergency is a global phenomenon, but that should not be an excuse to avoid thinking and acting locally. In Navarre, much has changed in the past decade regarding our responses to the reality of climate change. The approval of the Navarrese Law on Climate Change and Energy Transition in March 2022 was a major milestone on this path, which we have since been developing extensively through the Climate Change Office of Navarre, created under this very law. However, five years earlier, we had already started taking initial steps, such as the KLINa climate change roadmap and the LIFE NAdapta initiative, the first integrated climate change adaptation project in a European region.

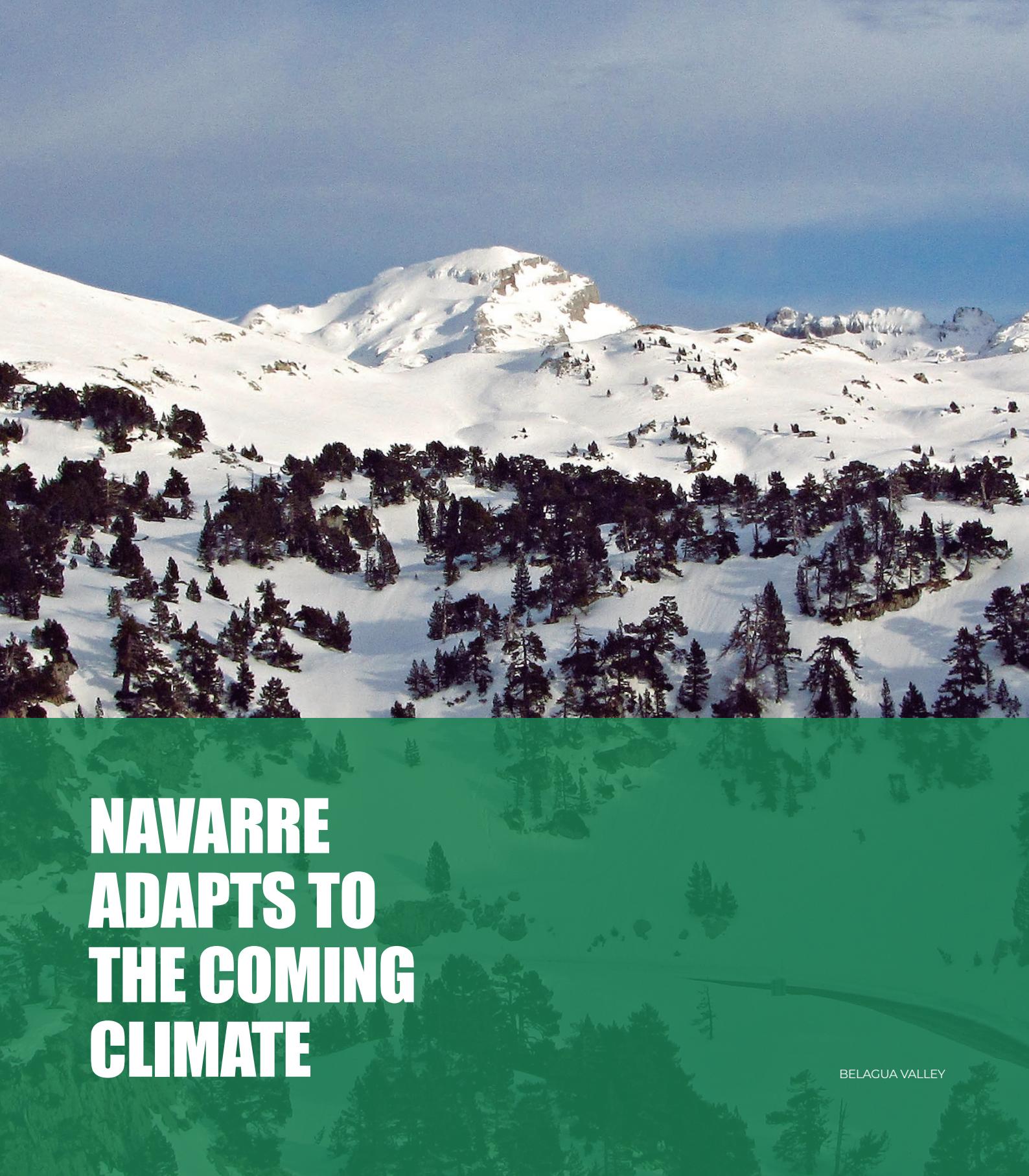
Since 2017, the transversal LIFE NAdapta project has allowed us to understand

and measure the impacts of climate change in Navarre and to project future scenarios—rising temperatures, more intense rainfall, prolonged droughts, increased frequency of heatwaves, reduced water availability, and the spread of pests, among other extreme events. Most importantly, it has enabled us to research solutions to anticipate, reduce vulnerability, and adapt to the climate scenarios ahead. In short, it is an opportunity to transform our production system, cultivate and produce food responsibly, build more liveable cities, towns, and territories, move differently, and consume locally... As communicator Javier Peña says, “Climate change can be a great gift for humanity.”

Led by the Directorate General for the Environment, technical teams from various government departments, four public agencies—OREKAN, INTIA, NASUVINSA, and NILSA—and the Public University of Navarre (UPNA) have carried out 53 actions across six areas—monitoring, water, forests, agriculture, health, and urban planning—with tangible, verifiable results. I want to express my gratitude and congratulations to these teams. May their results also inspire companies, civil society, and public administrations in Navarre to incorporate a climate perspective into policies, strategies, and daily habits, in the shared challenge of transforming our environment to adapt and make the planet a habitable home—one that might even surprise Jane Goodall herself.

José M^a Aierdi Fernández de Barrena
Minister of Rural Development and
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NAVARRE ADAPTS TO THE COMING CLIMATE

BELAGUA VALLEY

Introduction

LIFE-IP NAdapta-CC is the EU's first large-scale integrated LIFE project focused on **climate change adaptation** in a region: Navarre. Its "integrated" nature means it does not focus on a single sector or problem but applies the Climate Change Roadmap for Navarre (KLINa) in a coordinated way across all relevant areas: natural environment, forests, agriculture, livestock, water, health, infrastructure, and municipalities. Unlike other LIFE projects with a narrower scope, LIFE-IP NAdapta-CC brings multiple actions under a single strategic framework, ensuring coherence, maximizing resources, and serving as a replicable reference for other European regions. The project has a **total budget of €15.6 million**, 60% of which comes from the European Union through the LIFE programme. Its duration runs **from 02/10/2017 to 31/12/2025**.

To increase the resilience of the territory and society, LIFE-IP NAdapta-CC has implemented 53 actions, **37 of which are technical** and grouped into **six areas**:

1. **Monitoring**. Indicators and local **climate action** (Covenant of Mayors for Climate and Energy)
2. **Water** (Floods, droughts, and the urban water cycle)
3. **Forests** (Forest vulnerability and adaptive forest management)
4. **Agriculture and Livestock** (Soil, irrigation, plant and animal health, silvopastoral systems)
5. **Health** (Extreme temperatures, air quality, emerging risks, vectors, and pollen)
6. **Infrastructure and Territorial Planning** (Landscape, built heritage, and infrastructure).

LIFE IP NAdapta CC is also a collaborative project: coordinated by the De-

15,6

MILLION BUDGET
60 % from the EU, 40 % from the Government of Navarre.

partment of Rural Development and Environment of the Government of Navarre, co-financed by the Government of Navarre, and executed with various regional administration services. The Department itself and key public entities—**OREKAN**, **INTIA**, **NILSA**, **NA-SUVINSA**, and **UPNA**—carry out the actions, alongside an extensive program of public **education and outreach**.

Why does it matters?

Adapting to the climate does not mean waiting for damage to happen but **preparing in advance**: strengthening our cities and towns, protecting ecosystems, supporting agriculture, and safeguarding those most vulnerable. By adapting our social, economic, and ecological systems, we can **anticipate, prevent, and protect**, building resilience and offering a safer future for all, particularly the most vulnerable communities.

In these pages, you will discover, organized into six major areas, **real examples of ongoing measures, results, and the legacy** LIFE-IP NAdapta-CC leaves for advancing Navarre's adaptation to the coming climate.

Starting point: Risks and opportunities

The climate context in Navarre

When LIFE-IP NAdapta-CC began, Navarre was already feeling the effects of climate change: milder winters, longer and drier summers, irregular rainfall, and extreme events. Information existed, but Navarre needed to **organize and update knowledge on these effects**: integrated data on changing temperatures and rainfall and how these impacts on water, forests, agriculture, health, or infrastructure were lacking.

Efforts were made to **improve monitoring of climate variables and their consequences in Navarre**. The collected information is presented in a comprehensible way so anyone can understand and use it in decision-making. This monitoring is often accompanied by future projections to anticipate what could happen in our territory and respond effectively.

Impact chains are one such tool: they connect what happens (threat) with what it causes (impact) and what we can do (response).

Meanwhile, many municipalities **were unclear about their role** in climate action, even though cities concentrate much of the emissions and already suffer impacts on health and well-being. Practical **local action had to be activated**.

Rivers: source of life... and threat

Water has always been a vital resource in Navarre, though unevenly distributed and managed across the territory. Rivers, reservoirs, and treatment plants have supported life and the economy, but the climate is altering this balance: **lower average precipitation**, higher mean temperatures, more **extreme heat** days, sudden storms, and droughts.

The result: **lower flows** (more vulnerable to pollution and the need to adapt sectors that rely on water—supply, sanitation, and treatment) and heavy rainfall events impacting **already saturated sewage networks**, flooding towns and cities. In this context, strengthening treatment plants, monitoring overflows, and anticipating floods is not a luxury—it is a necessity.

Forests: Guardians under pressure

Navarre's forests are more than trees: they regulate water, provide shelter for species, capture CO₂, protect against erosion, and supply resources for local communities and the economy. But rising average temperatures, reduced rainfall, and extreme events such as torrential rains, heatwaves, or storms threaten this protective function and reduce productivity.

In some areas, accumulated forest fuel is a powder keg waiting for a spark.



SOURCE OF THE UREDERRA RIVER

50%

OF HOUSING BUILT BEFORE 1980
Half of Navarre's homes were built when thermal insulation was not considered.

Mapping vulnerabilities, monitoring forest health, and understanding available biomass became a priority to **anticipate fires**, maintain biodiversity, and sustain productivity.

Agriculture and Livestock: Vital for life, fragile in the face of climate

Farming faces a double challenge: **climate affects soils** (less organic matter, more erosion) **and tests crops under scarcer water resources**. At the same time, land abandonment, rural depopulation, and loss of livestock leave pastures unmanaged, increasing fire risk.

The solution: **care for soil**, save water, choose crop varieties suited to new climate conditions, and **reintroduce silvopastoral systems**—animals grazing while reducing forest fuel.

Health: Climate is in the air

Extreme heat is not only uncomfortable but also a **health risk**, especially for vulnerable populations, the elderly, children, and outdoor workers. Air quality and climate change are interconnected: more tropospheric ozone, more pollen, more respiratory problems.

New risks also emerge: previously unseen pathogens, mosquitoes settling in new areas, and waterborne viruses. Here, health monitoring and early warning systems are the best protection.

Infrastructure and housing: Heat, cold, and roads at risk

Roads face more heat, heavy rains, or frost, and not all are prepared. Evaluating vulnerabilities and planning interventions is key to maintaining safety and connectivity.

Housing presents a major challenge: **half of Navarre's residential buildings** were built before 1980, when thermal insulation was not a priority. These buildings consume more energy and offer less comfort. Identifying the most vulnerable and planning renovations is essential to protect people and the planet.

Opportunities arising

This diagnosis not only highlighted problems but also revealed opportunities:

- Transform scattered data into **clear, useful information**
- Create **early warning systems** for water, forests, agriculture, livestock, health, and air quality. Mapear riesgos para actuar antes de que sea tarde.
- Map risks to act before it's too late
- Test **energy and community solutions** in neighbourhoods and industrial areas

In short, **move from concern to action**, based on science and with citizens as protagonists.

LIFE-IP NAdapta-CC at a glance

Eight years adapting Navarre to the coming climate

LIFE-IP NAdapta-CC is a pioneering project in Europe: **the first to apply an integrated climate change adaptation strategy across an entire region**. Between 2017 and 2025, it has implemented concrete actions in six major areas, from water to health, including forests, agriculture and livestock, infrastructure, urban planning, and local action.

Objective: **Protect people, nature, and Navarre's economy** from climate impacts with real, measurable, and replicable solutions.

The consortium: a team work

COORDINATOR



PARTICIPATING ENTITIES



SIX AREAS, ONE COMMON MISSION

	Main activities	Example
Climate and local action	Measurement and analysis of climate variables in Navarre and support to municipalities develop their Sustainable Energy and Climate Action Plans (SECAPs).	223 municipalities have joined the Covenant of Mayors, of which 202 have grouped together to approve a total of 18 SECAPs.
Water	Strengthen wastewater treatment plants, as well as monitors overflow points, and improvement of early warning systems for floods and droughts.	28 wastewater treatment plants monitored and 496 overflow points inventoried.
Forestry	Vulnerability assessment, selection of climate-adapted species, and reviews and updates of forest management measures to address climate change.	New selected stands adapted to the future climate and three forest management guides adapted to climate change.
Agriculture and livestock	Protection of soil upgrade of water saving systems, preservation of plant and animal genetic material, and restoration of silvopastoral systems.	Guide of Local Horticultural Varieties of Navarre.
Health	Monitoring of heat waves, air quality, pollen monitoring, and disease-carrying vectors.	Early warning system for high temperatures and air quality.
Infrastructures and territory	Renovation of buildings, improvement of neighbourhoods, and analysis of roads' vulnerability.	Pilot project of climate-adapted public housing in Burlada to reduce energy consumption.

40%

40% BUDGET FROM THE GOVERNMENT OF NAVARRE
The remaining 60% comes from the European Union (LIFE Programme).

RIVER EBRO AT MILAGRO



ARGUEDAS

Climate change monitoring and local action

Measuring climate, empowering and local action

Adaptation begins by understanding what is changing and where, and by implementing solutions locally, municipality by municipality.

In this area, LIFE-IP NAdapta-CC has created a climate change indicator system for Navarre and has promoted the preparation of Sustainable Energy and Climate Action Plans (SECAPs) by municipalities, within the framework of the Covenant of Mayors.

As of August 2025, 223 out of Navarre's 272 municipalities were part of the Covenant of Mayors initiative, and 187

had already approved their SECAPs. This means that the vast majority of the territory now has a clear plan to reduce emissions, adapt to climate impacts, and combat energy poverty.

Key measures

- Climate indicator platform: open-access, updated data on temperature, precipitation, droughts, heat waves, etc., including projections of potential future climate trends, accessible to administrations, businesses, and the public.
- Impact chain methodology: links threats (e.g., drought) with effects (e.g., crop loss) and measures (e.g., efficient irrigation), facilitating decision-making.

223

MUNICIPALITIES PART OF THE COVENANT OF MAYORS

- Technical support for municipalities assistance in developing and implementing SECAPs, with diagnostic and monitoring tools.
- Local action monitoring: periodic reports showing progress and challenges at the municipal level.

Results in figures

- 223 municipalities part of the Covenant of Mayors.
- 187 SECAPs approved and under implementation.
- Website with more than 120 updated climate indicators.
- Own methodology for developing impact chains, replicable in other regions.

HIGHLIGHTED EXAMPLES

1

THE PORTAL THAT TRANSLATES THE CLIMATE

In 2022, the Climate Indicator Portal for Navarre was launched: a website where anyone can see changes in temperatures, the number of extreme heat days last summer, or precipitation trends in their area. It is designed to be intuitive: clear graphics, downloadable data, and plain-language explanations.

2

A TOWN AHEAD OF THE HEAT

In Cáseda, the local SECAP identifies extreme heat as a key threat to the health of children and the elderly. Thanks to the plan, public spaces are being redesigned with new green areas, serving as open climate shelters to reduce risk during heat waves.

Caring for every drop, preparing for every flood

Water

In Navarre, water is life: it irrigates fields, supplies towns, and supports unique ecosystems. However, climate change is straining this balance: rainfall is becoming less regular, **storms are more intense**, and **drought periods are prolonged**.

The result is twofold: rivers with lower and more vulnerable flows, and drainage networks that cannot cope with torrential rainfall.

In this context, LIFE-IP NAdapta-CC has worked to **monitor, anticipate, and adapt key infrastructures**, from wastewater treatment plants to alert systems.

Key measures

- **Monitoring** of Wastewater Treatment Plants (WWTPs): 28 facilities equipped with measurement and alert systems for floods and discharges.
- **Inventory of relief points**: 496 locations in sewer networks with more than 50 sensors and real-time alert systems.
- **Sustainable Urban Drainage Systems (SUDS)** to retain and filter rainwater in urban areas.
- **Flood Early Warning System (FEWS)**: combines sensor data, meteorological stations, and models to forecast floods up to 48 hours in advance.
- **Municipal Flood Risk Action Plans (PAMRI, by its acronym in Spanish)**: guides and tools for municipalities to know how to respond.

- **Project design compatible with restoring river dynamics**, reducing flood damage and ensuring environmental recovery.
- **Water resource studies**, anticipating future demands and ensuring supply.

Results

- **28 monitored WWTPs**.
- **496 relief points** inventoried.
- **50 sensors** with automatic alerts.
- **Early warning system providing alerts** up to 48 hours in advance
- **17 Municipal Flood Risk Action Plans** covering 102,000 people, improving civil protection responses to floods.
- **5 projects drafted to reduce flood damage** and restore ecosystems.

HIGHLIGHTED EXAMPLES

1 THE RADAR THAT MONITORS THE RIVER IN REAL TIME

In Tudela, the Flood Early Warning System combines sensor data from the Ebro River basin and meteorological predictions to alert authorities up to two days before a major flood. This allows for protective measures, road closures, and timely public warnings.

2 WASTEWATER PLANTS WITH “EYES”

At the Arazuri (Pamplona) WWTP, sensors detect abrupt changes in flow and water quality. When a storm overwhelms the network, the system immediately triggers protocols to minimize discharges into the river, protecting its ecosystem.

VILLAVETA RESERVOIR

Green guardians under emerging threats

Forests

The forests of Navarre serve multiple critical ecological and socio-economic functions: water regulation, carbon sequestration, biodiversity conservation, soil erosion protection, and provision of resources for municipalities. Climate change, however, is increasingly challenging these functions.

Extended droughts, stronger winds, storms, pest proliferation under warmer conditions, and heightened wildfire risk are altering forest health and structure. To enhance forest resilience, LIFE-IP NAdapta-CC has focused on **assessing forest condition, risk prevention, and adaptive management strategies**.

Key Measures

- **Vulnerability mapping:** Spatial analysis identifying forest areas most sensitive to drought, storms, or wildfires.
- **Climate-adapted genetic selection:** Collection of seeds and identification of sources better suited to future climatic conditions for forest conservation and restoration.
- **Adaptive management guidelines:** Protocols to optimize forest management under changing climatic scenarios.
- **Integration of adaptation measures:** Incorporation of climate change considerations into forest planning and operational management.
- **Pilot trials in adaptive silviculture:** Experimental approaches tested at the Sabaiza estate of the Forest Heritage of Navarre and studies focused on chestnut as an alternative tree species.

Quantitative outcomes

- Comprehensive vulnerability **maps** addressing temperature rise, precipitation decline, extreme winds, and wildfire risk.
- Establishment of **new seed sources** adapted to hotter, drier conditions and conservation of highly vulnerable species.
- **Creation of a forest management database**, essential for monitoring the effects of forest planning under a climate change scenario.
- **Pilot silvicultural trials** to determine methods that enhance forest resilience.
- Promotion of **chestnut species as alternatives** where other species have faced health issues.

HIGHLIGHTED EXAMPLES

1 SABAIZA “THERMOMETER FOREST”

In this forested area, the response of different species to various forestry interventions has been evaluated, identifying which actions offer the greatest resilience.

2 SEEDS FOR TOMORROW'S FORESTS

Seeds have been harvested from trees showing greater tolerance to water stress and high temperatures. New seed sources have been designated, ensuring that reforestations in the coming decades will be better prepared for the future climate.

URBASA

Fertile land, secure future

Agriculture and livestock

Navarre's agricultural sector is at the frontline of climate change. Longer droughts, increasingly irregular rainfall, and pests and diseases (bacteria, fungi, etc.) finding favourable conditions threaten crops, livestock, and livelihoods.

However, agriculture and livestock are not only affected by climate change—they are also part of the solution. With well-managed soils, efficient irrigation, and practices that reduce fire risk, they can become **allies for adaptation** and territorial resilience.

Key measures

- **Soil management plan:** Analysis of soil quality and measures to maintain organic matter, reduce erosion, and improve fertility.
- **Smart irrigation:** Tools and models to optimize water and energy consumption.
- **Locally adapted varieties:** Selection and promotion of crops resistant to heat and water scarcity.
- **Pest and disease monitoring in agriculture and livestock:** Early detection and timely response to diseases or insect infestations.
- **Animal vector management:** Monitoring of species that can transmit diseases to livestock or humans.
- **Silvopastoral systems:** Pilot project on the Sabaiza estate using grazing to reduce vegetation fuel and prevent fires.

Results in figures

- Navarre's first **Resilient Soil Management Plan** with sustainable agricultural practices that minimize erosion and preserve soil organic matter.
- **Expanded pest and disease early warning system** for agriculture, enabling early action recommendations.
- **Guides on locally adapted garden varieties** published, including a catalog of 65 recovered local varieties.
- **Pilot silvopastoral plan** on the Sabai-za estate to study livestock effects on different pasture types.
- **Irrigation models adapted** for different regions.

HIGHLIGHTED EXAMPLES

1

GRAZING AGAINST FIRE

In the low forest and scrub areas of the Sabaiza estate, pasture zones have been created and an endangered horse breed, the Jaca Navarra, has been introduced. Controlled and rotational grazing is studied to analyze pasture consumption. Livestock also contributes to soil fertility and maintains open landscapes, benefiting biodiversity.

2

CONTROLLED IRRIGATION

In Zona Media and Ribera, farmers have implemented a smart irrigation system that adjusts water amounts according to real crop needs using moisture sensors and weather forecasts, reducing consumption and preparing plants for heat waves.

Protecting health in changing times

Health

Climate change does not only affect landscapes and crops; **it also directly impacts human health**. More intense heatwaves, polluted air, and new species transmitting diseases pose challenges that require monitoring, prevention, and rapid response.

LIFE-IP NAdapta-CC has worked to **protect vulnerable populations** and anticipate these risks through alert systems, air quality monitoring, prevention campaigns, and control of disease-transmitting species.

Key measures

- **High-temperature prevention plan:** Protocols to protect citizens, especially vulnerable groups such as people with chronic illnesses, pregnant women, the elderly, and children.
- **Air quality monitoring:** Continuous measurements and alerts when pollutant levels exceed safety thresholds.
- **Occupational health:** Visits to companies and guides with recommendations to prevent heat stress in outdoor work.
- **Monitoring of emerging risks and invasive disease vectors:** Improved detection of pathogens and contaminants related to rising temperatures, and campaigns to monitor animal vectors.
- **Public training and awareness activities:** For example, against the tiger mosquito, in collaboration with Bera municipality, including a special campaign with schools of Navarre.
- **Pollen monitoring:** Updated information and calendars for allergy sufferers.

Results in Figures

- Annual health prevention plan for high temperatures and air pollution in Navarre, updated by ISPLN.
- **Guides and protocols** to prevent occupational heat risks, including visits to 245 companies.
- Improved monitoring of temperature-related pathogens and contaminants in water.
- **Citizen science activity “Tiger Patrol”** for mosquito monitoring in collaboration with multiple schools.
- New multidisciplinary technical working group (Crosscutting Technical Group on Vectors) involving INTIA, ISPLN, OREKAN, Agri-Food Laboratory of Navarre, Navarrese Blood Bank, and various units of the Department of Rural Development and Environment.



HIGHLIGHTED EXAMPLES

1 LIFE-SAVING ALERTS

In summer, when a heat wave is approaching, alerts are sent to municipalities, the media, and social networks with specific measures: drink water frequently, avoid intense physical activity during peak hours, set up cool spaces, and more. This allows vulnerable people to take precautions before the heat becomes extreme.

2 TIGER PATROL: SCIENCE IN EVERYONE'S HANDS

Through local workshops, students help detect tiger mosquito eggs and adult specimens. This information allows authorities to act quickly in high-risk areas, preventing its spread and reducing the risk of disease transmission.

ZUGARRAMURDI

Cities and towns prepared for the climate of the future

Infrastructure, urban planning and territory

Climate change not only threatens ecosystems: it also tests our landscapes. More frequent heat waves, torrential rains, or extreme frosts affect comfort, safety, and energy consumption.

LIFE-IP NAdapta-CC has worked to make Navarre's infrastructure—from buildings to roads—more resilient, efficient, and healthy, combining technical interventions with the involvement of neighbourhoods, towns, and businesses.

Key measures

- **Landscape planning:** Integration of adaptation into the protection of Navarre's landscapes and publication of a management guide based on landscape evolution under climate change scenarios.
- **Adapted built environment:** guide with solutions for buildings and public spaces at different scales, and re-

vision of construction standards considering climate change.

- **Rehabilitation of public heritage** with climate and energy criteria, identifying measures, prioritization, and necessary investments.
- **Pilot projects** in public housing (Burlada) and urban neighbourhoods (Barrio de Lourdes in Tudela).
- **Creation of energy communities in buildings and public spaces** (Garralda), and in industrial estates.
- **Vulnerability analysis of roads** and intervention plan.
- **Cost-benefit evaluation** of interventions in buildings.

Results in figures

- **Integration of adaptation into the protection of Navarre's landscapes:** territorial development models that integrate climate change adaptation, 32 singular landscapes analyzed with adaptation proposals, and a guide

showing how Navarre's landscape may change.

- **Urban and rural pilots** in neighbourhoods and municipalities throughout Navarre, both in public housing (Burlada) and urban neighbourhoods (Barrio de Lourdes in Tudela) and rural settings (Uhart Arakil, Etxarri Aranatz, Lekunberri, Leitza, and Arakil, totaling 34 buildings representing 182 collective dwellings).
- **More than 20 energy communities** created in Navarre.
- **Vulnerability diagnosis** of the road network.
- **Roadmap** for the rehabilitation of vulnerable housing and diagnostic map of the residential stock to identify, locate, and classify the buildings most vulnerable to climate change and prioritize actions.
- **Cost-benefit evaluation** of interventions in buildings: overall profitability of 134% and estimated net benefit of +€9.3M.



HIGHLIGHTED EXAMPLES

1 PUBLIC HOUSING THAT STAYS COOL WITHOUT AIR CONDITIONING

In Burlada, a block of public housing has been rehabilitated with thermal insulation, cross ventilation, and solar protections. The result: cooler indoor temperatures in summer, lower energy consumption, and greater comfort for families, even during heat waves.

2 SHARED ENERGY IN THE INDUSTRIAL ESTATE

Pilot energy communities have been developed in two vulnerable economic activity areas: the industrial estates of Aranguren and Valle de Sakana. Companies and/or neighbours can share electricity generated by solar panels installed on the roofs of the warehouses. This reduces costs, emissions, and dependence on the grid, while strengthening local collaboration.

PAMPLONA

A project with people and strong networking

Participation, training and communication

LIFE-IP NAdapta-CC has not remained in offices or technical reports: it has gone out to squares, schools, fairs, and social networks to involve the entire society of Navarre. Because adapting to climate change is not only the task of technicians or administrations: it requires that citizens, companies, municipalities, and social entities join in with knowledge and action.

Medidas clave

- **Specialized training** for municipal technical staff, farmers, healthcare personnel, teachers, and other key groups.
- **Workshops and open days** for citizens to explain risks and adaptation measures.
- **Awareness campaigns** in the media, social networks, and public spaces.
- **Collaboration with educational centers** to include climate adaptation in school activities.
- **Demonstration events** in the field and urban environments to show real solutions.
- **Networking with other European projects** (LIFE, Horizon, Interreg...) to exchange experiences and best practices.

Results in figures

- **More than 200 workshops and sessions** held in different locations across Navarre.
- **Thousands of participants** among citizens, technical staff, and institutional representatives who have benefited from trainings, courses, and practical sessions.
- **Thematic campaigns** such as “Tiger Patrol,” in which 5 educational centers of the Chartered Community participated, with wide coverage in media and social networks.
- **International collaborations** within the framework of the LIFE project network.
- **More than 50,000 visits to the project website.**

HIGHLIGHTED EXAMPLES

1

UNED AND AEMET ONLINE COURSE

In 2023, LIFE-IP NAdapta-CC collaborated with UNED and AEMET in an online course on climate change and the environment that exceeded 12,000 attendees, including live and recorded sessions. A massive training experience that brought climate science and adaptation solutions closer to thousands of people both inside and outside Navarre.

2

LIFE NADAPTA MEETINGS

During these participatory sessions held in Pamplona and Tudela in June and October 2025, various activities open to the public were carried out: talks, project exhibition, thematic escape room, presenting real solutions in key areas such as health, urban planning, forests, water, and agriculture.

RONCAL VALLEY



Eight years of climate action in Navarre

Global impact and legacy

Between 2017 and 2025, LIFE-IP NAdapta-CC has transformed climate change adaptation in Navarra into something **tangible, measurable, and close** to the people. It is not just about figures: behind every indicator are people, ecosystems, companies, and municipalities that are now better prepared for the challenges ahead.

Figures summarizing a change

- **37 technical actions** executed in 6 key areas and 16 horizontal and cross-cutting actions, totalling 53 actions.

- **223 municipalities** adhering to the Covenant of Mayors.
- **187 SECAPs** approved and underway.
- **28 wastewater treatment plants** monitored and equipped with alert systems.
- **496 relief points** inventoried and monitored.
- **50 sensors and 3 automatic stations** to anticipate rises in sanitation systems.
- **Early warning system for floods posing risk to the population with more than 170 precipitation recording stations and over 80 river gauging station** capable of **anticipating rainfall events** up to 48 hours in advance.
- **17 Municipal Flood Risk Action Plans (PAMRIs)** in the most priority municipalities, covering a total population of 102,000 people.
- Identification and mapping of the most **climate-vulnerable forests** throughout Navarre.
- **Selection of native seed sources** of 15 forest species potentially highly vulnerable to climate change, and identification of the locations most adapted to future scenarios (more resilient) across Navarre, as well as adapted seed banks.
- **Pilot plans for forest management and silvopasture** at the Sabaiza estate, part of the Government of Navarre's heritage.
- **Heat and air quality alert systems** operational throughout Navarre.
- **More than 20 energy communities** in neighbourhoods and industrial areas.
- **134% overall profitability** in buildings.
- **Expansion of the tiger mosquito monitoring network**, as a vector of emerging diseases, with more than 70 traps installed across Navarre.

- **Pest and disease alert station** for the agricultural and livestock sector.
- **Diagnosis, mapping, and management plan** of soils vulnerable to climate change.
- **Real-time monitoring and alert system for pollen presence in Navarre.**

Main achievements

- **Accessible knowledge:** public portal with more than 100 climate indicators and a replicable impact chain methodology.
- Nearly 70% of Navarre's municipalities have a **climate and sustainable energy action plan** with specific measures for each municipality.
- **Multi-sectoral and networked work to achieve greater progress**, because climate change is transversal to all sectors and levels of administration and must include citizens.

- **First vulnerability diagnoses** for Navarre regarding climate change.
- **Risk protection:** early warning systems to prevent potential damage from extreme events.
- **Adaptation to withstand changes** in temperature, precipitation, and extreme events.
- **Urban and rural resilience:** energy rehabilitation, sustainable drainage, and pilot projects in municipalities.
- **Citizen participation:** campaigns, workshops, and citizen science providing greater knowledge of climate change impacts and Navarre's adaptation measures.

What remains as a legacy

LIFE-IP NAdapta-CC does not end in 2025. It leaves a solid foundation for Navarre to advance:

- Digital tools to monitor and anticipate impacts.

- Local plans and technical guides to implement solutions in any municipality.
- Collaboration networks among administrations, companies, universities, and citizens.
- Pilot experiences that can be replicated across the region.
- Installed capacities in technical staff and public management to maintain and expand actions.

Looking to the future

The climate challenge continues. The legacy of LIFE-IP NAdapta-CC is **a map and a method** to keep adapting Navarre: reliable data, proven solutions, and an increasingly aware and prepared citizenry. The next stage will be to **maintain and scale** what already works, incorporate new technologies, and continue building resilience in every corner of the territory.

Keep the momentum, multiply the impact

Recommendations and next steps

LIFE-IP NAdapta-CC has shown that **adapting to climate change is possible** when science, political will, and citizen participation are combined. The challenge is to maintain efforts aligned with Navarre's climate change strategy and to make the most of the tools, experiences, and networks that have been created. Ultimately, it is about consolidating the technical expertise achieved, ensuring the presence of specia-

lized professionals, and maintaining a general culture of climate change adaptation among the population.

KEY RECOMMENDATIONS BY AREA

Monitoring. Indicators and local climate action

- Keep the indicators portal updated and accessible.

- Review and update the SE-CAPs to integrate new threats and solutions.

Water

- Maintain the Early Warning System and continue promoting innovation for a better response and greater efficiency.
- Keep the early warning systems in all areas up to date.
- Expand sustainable drainage

systems in vulnerable urban areas.

- Integrate the results of water availability reduction calculations into sectoral policies for industry, agriculture, and local administration, including supply, sanitation, and treatment.

Forestry

- Maintain and update the geodatabase of forestry ac-

tions for more effective forest management, enabling faster integration of innovations and the most effective measures achieved through research.

- Replicate the results of the adaptive management pilot in more areas of Navarre.
- Maintain, update, and, if needed, expand the seed bank and selected stands for future reforestation.

Agriculture and livestock

- Promote smart irrigation in more farms.
- Maintain alert systems for pathogens and diseases.
- Transfer the results of the silvo-pastoral pilot project to other areas of Navarre as a fire prevention tool.

Health

- Continue and update plans for heat and air quality, pollen monitoring, emerging risks, and vector control.

Infrastructure and territory

- Expand pilot projects for rehabilitation and energy communities to improve energy efficiency and savings in more buildings and neighbourhoods.
- Prioritize interventions on roads with higher climate vulnerability.

Strategic next steps

1. **Integrate adaptation into all public policies:** urban planning, energy, transport, health, and education.
2. **Ensure stable funding** to maintain and expand the actions initiated.
3. **Promote innovation** by applying new monitoring and management technologies.
4. **Expand international collaboration** to exchange experiences and attract European projects.
5. **Strengthen citizen participation** so that adaptation becomes a shared responsibility.



Looking to the future

The climate challenge continues. LIFE-IP NAdapta-CC ends in 2025, but it leaves a solid foundation for Navarre to continue advancing in:

- Digital tools to monitor and anticipate impacts.
- Pilot experiences that can be transferred and replicated across the region.
- Local plans and technical guides to implement solutions in any municipality or area of the territory.
- Collaboration networks among regional and local administrations, companies, universities, and citizens for joint action on climate change.
- Enhanced knowledge and capacity among technical staff and public management to maintain and expand actions.

Its results have contributed to achieving the objectives of the Climate Change Roadmap for Navarre 2017-2030/2050 (CCRN-KLINa) and measures of the Navarrese Law on Climate Change and Energy Transition, as well as implementing sectoral policies related to the European Green Deal or the Climate Pact, the Forestry Agenda, the Master Plan for the Urban Water Cycle of Navarre, Civil Protection Plans, the Rural Development Plan, among others.

The legacy of LIFE-IP NAdapta-CC is a map and a method to continue adapting Navarre: reliable data, proven solutions, and an increasingly aware and prepared citizenry. The next stage will be to maintain and scale what already works, incorporate new technologies, and continue building resilience in every corner of the territory.

Coordination team of the LIFE-IP NAdapta-CC project