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Building Climate Resilience with the Triple-A Toolkit (Analysis, Ambition, Action)

Experiences from Logroño, Spain

The city of Logroño, Spain, is demonstrating how the Triple-A Toolkit can accelerate climate adaptation by effectively assessing heat and flood risks, identifying socially vulnerable areas, and developing resilient pathways towards a climate-secure future.

Key Learnings

- **Triple-A Toolkit:** A flexible toolset supporting three main activities, “analysis”, “ambition”, and “action” (triple-A), that allows cities to assess climate impacts and risks, define objectives and goals, and plan and implement climate adaptation strategies while fostering stakeholder collaboration.
- **Flexible, Tailored Approaches:** Compared to fixed step-by-step guidelines, the Triple-A framework’s adaptable and flexible structure allows cities to start their climate adaptation journey based on their current capacity, providing tailored tools and resources for the different stages of urban resilience planning.
- **Kickstarting Adaptation in Less Mature Cities:** Logroño (Spain) had limited prior adaptation practices. With the help of the Triple-A Toolkit, the city is taking concrete steps in assessing risks and planning climate adaptation measures.

About the region

Logroño is a medium-sized city with about 80 km² and over 150,000 inhabitants located in northern Spain in the autonomous region of La Rioja. The city borders the Basque Country in the north and the Navarre region in the east. The city is ideally located, with the Ebro River to the north, its tributary Iregua to the east, and the La Grajera reservoir to the southwest. The region has an industrial benchmark for the whole Autonomous Community, with important industrial parks located to the East of the city. Small villages surround Logroño, mainly dedicated to agriculture, particularly vineyards. La Rioja is well known for its excellent winemaking.

Climate Hazards

Droughts, Extreme Temperatures,

Flooding

Sector

Urban, Water Management,

Energy, Transport, Biodiversity

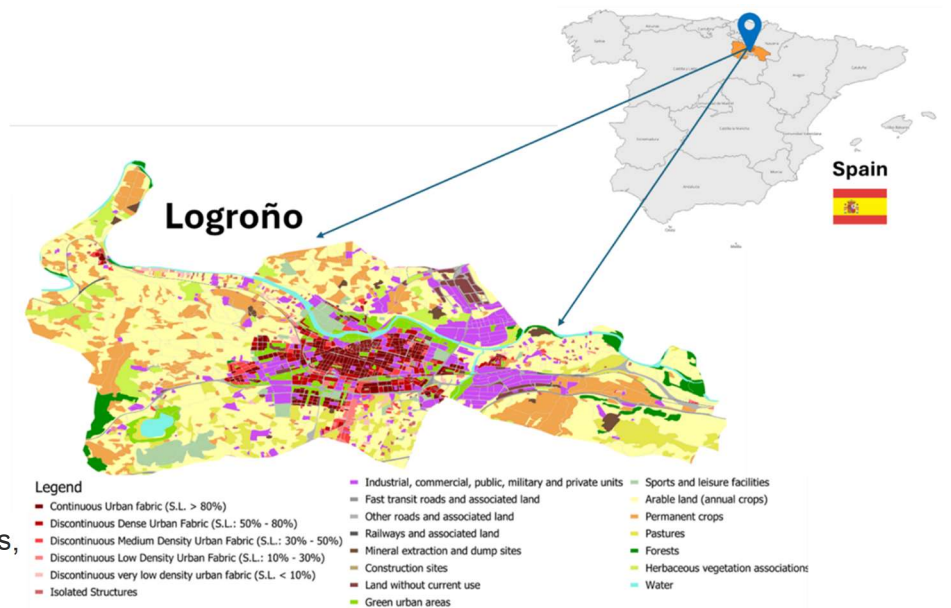
Key system

Critical Infrastructure,

Water Management,

Ecosystem and Nature Based Solutions,

Health and Well-being



Climate Threats

Logroño faces significant threats from extreme temperatures, floods, and droughts. In recent years, heatwaves have become more frequent and some heatwaves have started to occur earlier in Summer. Rainfall projections suggest slight declines in rain throughout the year, with more dry days ([Copernicus Interactive Atlas](#)). While projections estimate that the average annual rain will decrease, high-intensity rain events will become more frequent and intense, raising the risk of pluvial flooding in the city.

The Triple-A Toolkit is tailored to local requirements

To deal with changing climate conditions and increases in climate-related impacts and risks, cities such as Logroño need to accelerate climate adaptation action. The [Triple-A Toolkit](#) enhances the resilience of European cities to climate change through a comprehensive and flexible set of resources tailored to local users. The tools and services allow urban planners, decision-makers, and climate adaptation practitioners working in cities to better understand the risks and opportunities associated with climate change, prioritise adaptation measures, and develop effective adaptation strategies for cities.

Triple-A stands for Analysis, Ambition and Action. Unlike fixed step-by-step guidelines, the Triple-A framework offers a flexible approach to tailor approaches to local contexts, engage diverse stakeholders, and foster ambitious, climate-resilient cities. These activities include understanding climate change impacts, setting goals, implementing actions, and learning from the process. It allows urban planners and climate adaptation practitioners to better understand the risks and opportunities associated with climate change, prioritise adaptation measures, and develop effective adaptation strategies for their cities. They can apply the toolkit, regardless of whether they are in the early stages of adaptation or refining their more established strategies.

A key feature is its emphasis on ambition, encouraging cities to envision different futures and find ways to achieve them. Ambition setting takes a broader perspective and works towards “the future we want”, and integrates multiple policy objectives, besides climate adaptation. Herewith, it helps authorities to move from common, iterative, risk-based planning to more transformative climate-resilient societies. Ambition setting can be applied at different levels and with different focuses depending on city needs and context:

- Strategic (vision, targets, motivation),
- Technical (safety levels, risk prioritisation, measure selection criteria) and
- Evaluation/adjustment (benefits, trade-offs, Key Performance Indicators).

The Triple-A framework serves as a dynamic and adaptable guide for cities as they navigate the complexities of urban adaptation.

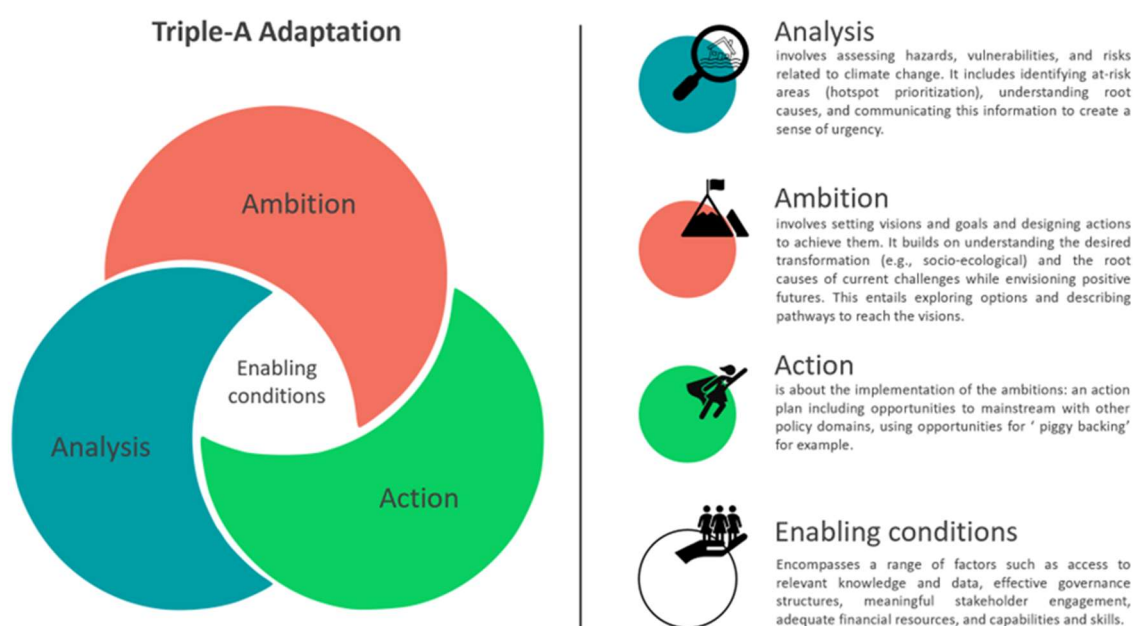


Figure 1: The Triple-A framework for adaptation. Triple-A stands for: Analysis, Ambition and Action. Image Credit: Climate Adaptation Services (CAS), REACHOUT.

Co-development with city authorities is at the project's core. The co-creation process in seven city hubs supports stakeholder engagement to raise awareness and foster ownership of the tools. End-users are also involved in the design process of tools as part of the Triple-A Toolkit. Engaging end-users directly

throughout the co-creation process allows for incorporating valuable local knowledge and end-user needs and fosters a sense of ownership.

Tools and services to address heat and flood and social vulnerability in Logroño

Logroño was in the early stages of climate change adaptation planning and implementation with limited initiatives in the city when the REACHOUT project began. Meanwhile, the city has applied several tools of the Triple-A Toolkit co-developed during three iterations.

Phase 1

The project team together with the key contact point at the municipality selected an initial stakeholder group and agreed upon a preliminary definition of challenges and risk. Extreme heatwaves are key priorities for further analysis.

- Assessing heatwaves with the [Thermal Assessment Tool](#): The tool provides a user-friendly visualisation of past, present and future heatwaves. It also enables the development of land surface temperature maps (heatmaps) to characterise heat phenomena at the city level and spatially highlight areas with higher surface temperatures during heatwaves. These maps allow Logroño to better understand how land and urban morphology affect surface temperature and to identify priority areas for implementing heat reduction measures. The tool's output helps the city to communicate heat risks to the public, increasing awareness and potential support for implementing heat reduction measures.
- Mapping social vulnerability throughout Logroño with the [Social Vulnerability Index tool](#) followed the heat assessment. The social vulnerability index maps allow spatial identification of the most vulnerable areas, enabling tailored interventions to enhance resilient strategies.

Phase 2

In this phase, the project team involved additional stakeholders at the municipal level and beyond (city hub) to discuss flood-related challenges and adaptation goals.

- The project team generated past and future pluvial flood maps with the [Pluvial Flood Tool](#) to assess current and future flood risks in Logroño. The Pluvial Flood Tool provides a comprehensive assessment of pluvial flood risk for both the baseline situation and various nature-based adaptation strategies in Logroño, evaluating economic damages and population exposure. This tool helped Logroño to identify suitable locations for flood relief measures, such as rain gardens, water ponds, and a green corridor.

Phase 3

The third iteration combined the outcomes of the Triple-A tools from phases 1 and 2 to identify suitable adaptation measures and co-develop [Climate Resilient Development Pathways](#) while considering Logroño's broader development objectives.

- The innovative development approach aids Logroño in planning across different time frames, mapping pathways that integrate climate adaptation, mitigation, and sustainable development, all while accounting for future uncertainties and interconnected impacts. Logroño can flag potential

trade-offs between needs and take advantage of synergistic actions while accounting for each priority.

Throughout these different stages, Logroño's adaptation capacity was strengthened. The municipality, as well as other city stakeholders, participated in several training sessions, the co-design of activities and the co-development of the [city climate story](#). The latter has been a transversal tool to spread the message and the sense of urgency about climate action in Logroño.

The tools within the Triple-A Toolkit can be used independently for specific purposes or integrated for a more comprehensive approach. For instance, the city of Logroño integrated the Social Vulnerability Index maps and heat maps with flood data to identify hotspots where heat and flood risks overlap in zones of high social vulnerability. Logroño then considered these hotspots while developing the Climate Resilient Development Pathways.

The municipality developed the "Strategic Plans for Heatwaves" as part of their new urban strategy, 'Logroño Circular'. The strategic plans directly incorporated the heat and social vulnerability maps developed with the tools from the Triple-A Toolkit to spatially localise and implement measures for coping with urban heat.

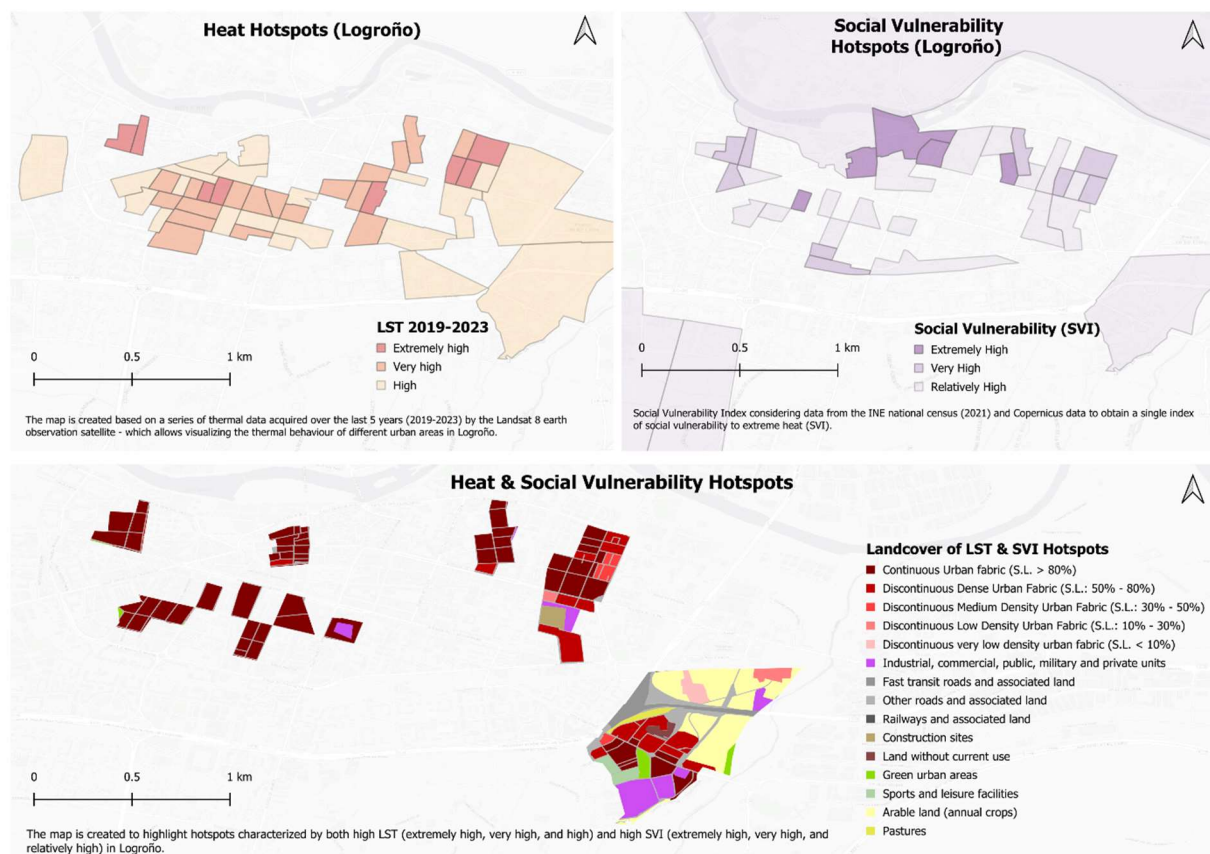


Figure 2: Heat and social vulnerability maps and combined hotspot areas. These maps were produced by the Thermal Assessment Tool and Social Vulnerability Index-Tool of the REACHOUT Triple-A Toolkit. Image Credits: Deltares, Tecnalia, University College Cork (UCC).

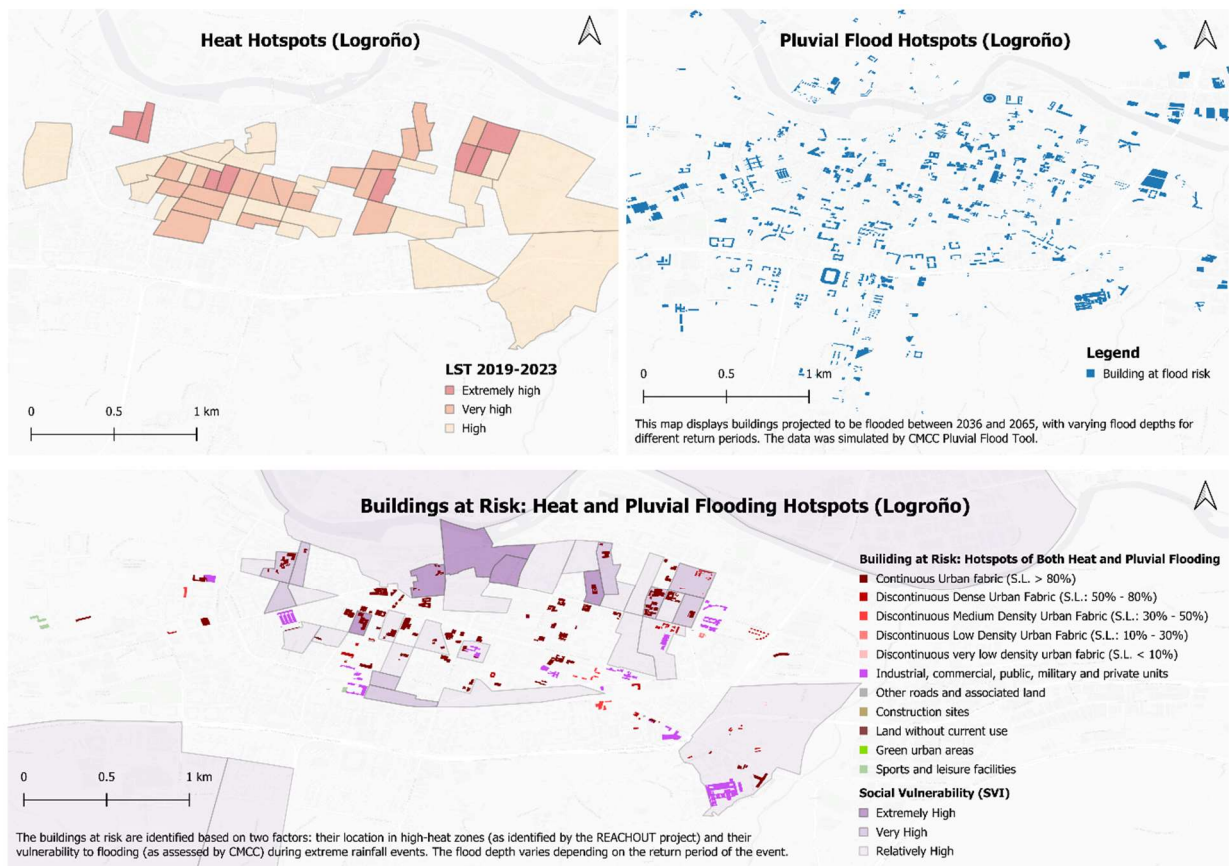


Figure 4: Heat, flood and social vulnerability maps and combined hotspot areas. These maps were produced by the Thermal Assessment Tool, Pluvial Flood Tool and Social Vulnerability Index-Tool of the REACHOUT Triple-A Toolkit. Image Credits: Deltares, Tecnalia, CMCC, University College Cork (UCC).

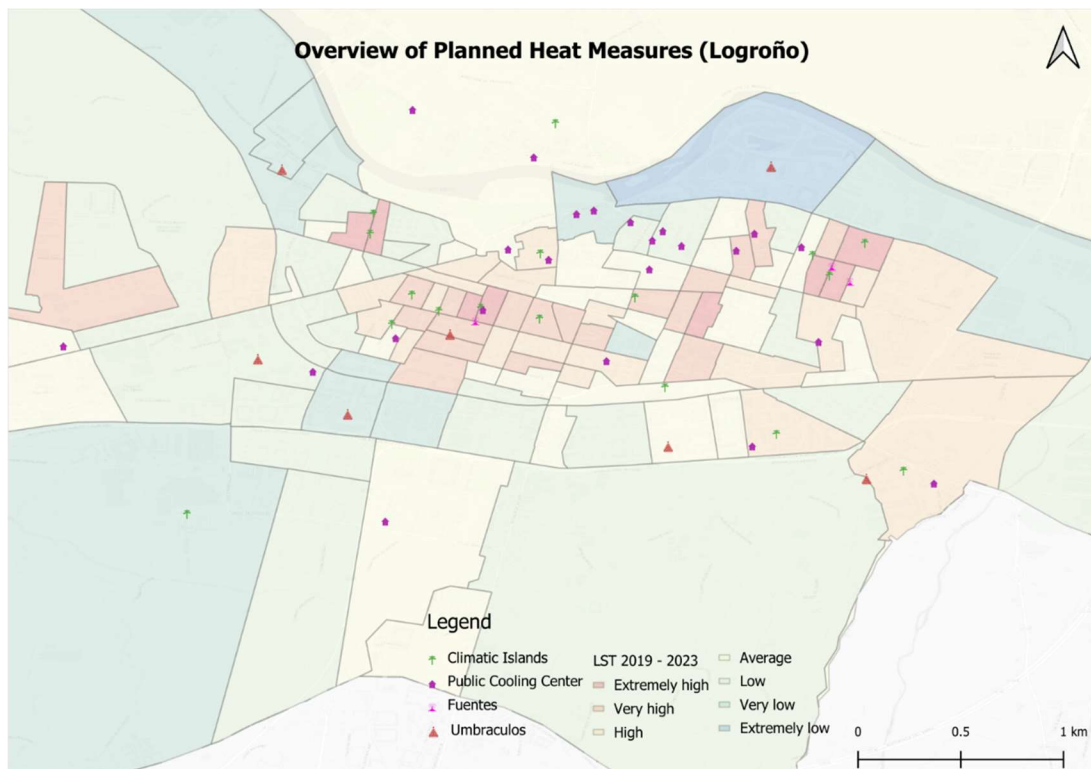


Figure 3: Overview of selected planned heat reduction measures in Logroño and their approximate locations. Base layer represents the land-surface temperature in Logroño based on satellite observations, produced by the Thermal Assessment Tool. Image Credit: Deltares, Tecnalia.

"The project and Triple-A Toolkit have enabled us to have conversations about adaptation to climate change and resilience from different perspectives, for the different municipal areas",

Elena Garrido Martínez, the city of Logroño

Summary

The Triple-A Toolkit offers tools and services to support the analysis, ambition, and action needed to achieve climate resilience. The city of Logroño has progressed in climate change adaptation by utilising the Triple-A tools. The project team assessed heat and flood risks and identified suitable measures for current and future risk reduction. Climate Resilient Development Pathways help Logroño plan long-term climate action. Worth mentioning that any city or region can apply the Triple-A Toolkit, regardless of its current level, capacity, and maturity in adaptation planning.

Further information

The work presented in this adaptation story is part of the [REACHOUT](#) project.

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[REACHOUT](#) is a European Commission-funded research and innovation project to advance user-oriented climate services to support the implementation of the Green Deal. Therefore, research partners, climate service providers and city stakeholders are co-developing a coherent set of services for seven city hubs across the EU.

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