

Community Response to Climate Change in Seville: Exploring Local Community Initiatives for Climate Action



PC: (Claggett, 2024)

UROP ID: 41025-CRCC

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Summer 2025

Abstract

This study explores how I am seeing residents of Seville, Spain, respond to increasingly severe summer heat waves driven by climate change. This summer, temperatures have soared as high as 110°F (43°C), disrupting daily life and emphasizing the urgency of climate adaptation. Through a series of interviews I conducted with adult residents over the summer, this research documents lived experiences, sustainable habits, and community responses to environmental events. My interview questions focused on how individuals manage the extreme heat, conserve water, energy, and food and engage with local sustainability initiatives.

The findings reveal that climate change has profoundly affected daily routines in Seville. Residents pause outdoor activity during peak heat, and the city has adapted by planting trees, installing shade structures, and reducing vehicle traffic in the city center to combat carbon emissions. These efforts are paired with public participation in waste sorting and conservation practices. However, despite these adaptive measures, the heat remains overwhelming, prompting many locals, who have the means, to leave the city during the summer months.

Introduction

The consequences of human environmental impact are becoming increasingly severe, causing significant damage to our air, oceans, and ecosystems worldwide. Weather patterns are shifting, and natural disasters are growing more unpredictable. Spain is no exception, with a sharp increase in floods and heat waves in recent years.

Southern Spain has even experienced heat waves so intense that they are now classified on a scale similar to hurricanes or tornadoes. These heat waves are especially damaging to cities, particularly tourism hotspots. In October 2024, Valencia, Spain, was hit by unprecedented floods that claimed the lives of over 220 people (Pons & Lombardi, 2025). In February 2024, Barcelona endured 40 months without rain, leading the city to declare a drought emergency and invest half a billion dollars in desalination plants along the coast to address water shortages and climate change (CTIF, 2024).

Extended periods of extreme heat can lead to heat stress, dehydration, and heat-related illnesses, putting a strain on public health systems. In 2022 alone, 60,000 heat-related deaths in Europe were attributed to climate change (Broomell et al., 2024). In addition, heat waves can trigger wildfires, damage infrastructure, and reduce crop yields, leading to significant economic losses. The European Commission reports that extreme weather events have cost Spain 7.7% of its GDP over the last 40 years (Pons & Lombardi, 2025). These heat waves pose a serious threat to infrastructure, human life, agriculture, and ecosystems. As climate change continues to devastate the environment, taking action is imperative.

Spain has introduced several climate action policies, including a promise to reduce greenhouse gas emissions by 55% and achieve carbon neutrality by 2050 (International Trade Administration, 2024). These efforts are part of Spain's strategy for climate change adaptation

and resilience, with various institutions, organizations, and community initiatives focusing on green infrastructure, urban greening, habitat restoration, conservation, and improved waste management (European Commission, 2022). Public transportation improvements, sustainable tourism practices, and community involvement also offer individuals opportunities to contribute.

While institutional policies and proposals are a promising start, it is ultimately the community and individuals who must drive meaningful change. In this proposal, I outline my plan to study community involvement in climate adaptation and resilience efforts. I will focus on identifying projects that address current climate impacts and exploring preparations being made for the future. The fight against climate change is a collective responsibility, and I aim to bring the lessons learned back to my community in Hawai'i.

For this project, I will explore how local communities in Seville, Spain, contribute to sustainability and climate change action through their daily practices, policies, and grassroots initiatives. The goal is to document and analyze community-led efforts that promote environmental responsibility, reduce waste, and encourage sustainable habits. This research builds on previous studies in sustainability that highlight the role of community action in addressing climate change. While global policies are essential, many environmental improvements start at the local level, making it important to study how communities can take action on their own. By documenting real-world examples, this project can offer strategies that could be applied here in Hawai'i. The research will involve observations, interviews, and informal discussions with individuals and local organizations to gather firsthand perspectives. Findings from this project may help inform future sustainability initiatives and contribute to broader discussions on community-driven climate action.

Materials

Interview Materials

- Question guide and questionnaire
- Consent forms (2 copies)(translated)
- Recording Equipment
 - Smartphone for voice of interviews (with consent)
 - Camera for photographs (with consent)
 - Notebook for field notes
- Ethics Approval Materials
 - Responsible Conduct of Research (RCR)
 - Social and Behavioral Responsible Conduct of Research - Basic Course
 - Field Research Safety Plan

Methodology

I plan to divide my project in three phases, in terms of working with communities, organizations, and institutions in a snowball method. The snowball method expands our understanding of an issue by starting with specific individuals and gradually widening the interview sample through their recommendations (Fereshteh Ghaljaie, et al., 2017). I will work with my host family to identify various actions being done at the community level. I will then establish contacts and reach out at an organizational level. This can include civil society, non-profits, and companies that are actively developing solutions to adapt to climate consequences in the city.

To enhance my language skills, I will stay engaged with the community by reading local newspapers, following social media, and exploring other relevant outlets. This engagement will

serve as a foundation for following up with potential respondents at the community, organizational, and institutional levels.

Sample Interview Questions

Climate & Environmental Change

- How long have you lived in Seville, and how would you describe the climate during your time here?
- What changes in weather or seasonal patterns have you noticed in recent years?
- How have increasingly severe heat waves affected your daily life or routines?

Sustainability Awareness & Community Perspectives

- What are your overall opinions and observations about sustainability practices in Seville?
- How would you describe the general public's view of climate change here?
- Have you seen shifts in environmental awareness or behavior within your community?

Adaptation & Personal Practices

- How do you personally adapt to extreme heat or other climate-related challenges?
- Have your consumer habits changed over time in response to climate concerns?
- What ecological or conservation-oriented practices have you adopted in your daily life?

Community & Policy Improvements

- Are there changes or initiatives you wish to see in Seville that could better address climate impacts?
- What actions do you believe the city should prioritize that are not currently being implemented?

Final Reflections

- Do you have any final thoughts on climate change or sustainability in Seville?
- What advice would you give to future residents or researchers?

- What is one thing you believe people should know about Seville's future in the face of climate change?

Data Analysis

Upon completion, the data from the surveys will be organized and reviewed. A final report will be produced from the findings on sustainability efforts. This report will be shared with education, government, and community leaders in O'ahu to encourage and improve sustainability practices here in Hawai'i and at the university.

Findings and Interpretations

Several changes in Seville are reflected in public infrastructure. Recycling bins and sorted trash bins are widely available, with separation of glass, paper, plastic, and organic materials. Vehicle traffic restrictions and car-free areas in the city center aim to reduce emissions, and the city center has also added shade and increased vegetation to help combat climate. Some schools release students early due to heat, and the lack of air conditioning is considered a major public health issue.

Most of the changes, however, are found in daily routines, as locals avoid outdoor activities during peak heat hours (2–5 PM), adjusting shopping, dining, and errands to early mornings or late evenings. Water conservation is widely practiced, including turning off the tap while brushing teeth, taking shorter showers, and minimizing water use due to high utility costs. Electricity use is also reduced. Air conditioning is used sparingly and natural ventilation is common, along with avoiding use of electronic appliances during the day. Food conservation practices include growing vegetarianism, conscious food choices, and a low food-waste culture,

especially among older generations. Cultural adaptations persist, as traditional Spanish homes still utilize tile floors and high ceilings for passive cooling.

Behavior is often driven by financial motivations, as environmental concerns are often secondary to economic gain, seen in practices such as AC use and plastic bags. Tourism contributes to environmental degradation through energy strain, green space loss, and housing conversion. Misuse and contamination of waste bins is common, and littering remains a large problem. Participants expressed skepticism toward political promises and greenwashing, frustration over short-term solutions during election cycles and a lack of follow-up, and noted that climate conversations often arise only when directly affected (such as by traffic changes or bills), reflecting generally low awareness of environmental issues. Concerns also center on environmental exploitation, including tree cutting for road and rail development, water siphoning for commercial use, and the loss of protections for natural areas like Doñana Park.

A call to action emerged through references to Greenpeace campaigns, protests, and education efforts in Seville, as well as a desire for agriculture-sustainability programs and more education on environmental issues. Participants emphasized the need for more trees and green spaces in the city, stronger government action with long-term objectives and plans for preservation of wetlands and wildlife areas, less focus on political or economic gain and more on collective responsibility, and more transparent communication and community education. Residents expressed hope that the younger generations will lead the change, and participants called for empathy and moral responsibility in environmental stewardship.

Urban areas and vulnerable populations are feeling the impacts of heat, drought, and resource scarcity. While individuals are adapting habits, systemic enforcement and infrastructure remain inconsistent. A gap exists between climate awareness and sustained action, often due to

economic constraints and policy delays and lower-income communities feel climate impacts more due to limited resources.

Next steps include carefully evaluating the effectiveness of Seville's ongoing climate actions over the coming years, particularly as the city works toward its ambitious carbon neutrality goals, to identify which initiatives are most successful and which require adaptation or reinforcement. Efforts should focus on expanding community-driven conservation messaging to strengthen local campaigns, ensuring that residents are not only informed but actively engaged in sustainable practices. At the same time, small-scale behavior shifts, such as water and energy conservation, should continue to be encouraged in Hawaii and other communities, highlighting the cumulative power of individual actions. Advocating for more transparent, consistent, and comprehensive communication between policymakers and the public is essential to build trust, encourage participation, and foster long-term accountability. Ultimately, this research underscores that meaningful environmental change depends on the collective effort of both communities and individuals, positioning local engagement as a central driver of resilience, sustainability, and social responsibility in the face of climate change.

Project Reflection

Completing my first mentored research project taught me more than I could have hoped. I not only strengthened my skills in collecting and analyzing qualitative data, but also improved my ability to navigate challenges, adapt to new cultures, and engage in purposeful, professional conversations. This was a unique opportunity to gain experience in a field I have long wanted to explore. The greatest challenge was managing my short time there while deciding how to filter, organize, and present my findings effectively. In Seville, I pushed myself outside of my comfort

zone in networking and meeting people I might never have encountered otherwise. I had the privilege of speaking with many intelligent, unique, and compassionate individuals, and I am grateful for the chance to discuss such important topics with them. One of the most valuable lessons I learned was how to connect and collaborate with people from different cultures and backgrounds.

This project deepened my passion for environmental work and reinforced my understanding that environmental issues are deeply intertwined with politics, with community involvement being essential to meaningful change. I was continually inspired by participants' openness in sharing their perspectives and experiences, grateful for the connection I was able to build with each and every one.

Presenting my findings at the SURE Symposium this summer improved my ability to communicate research in a professional setting and gave me more confidence for future public presentations. I plan to continue research in this field, as this experience strengthened my passion for traveling, building connections, and working toward climate change solutions.

Acknowledgments

I would like to thank my mentor, Dr. Micah Fisher, for his guidance and encouragement throughout this project. I am grateful to the UROP program at the University of Hawaii at Mānoa and the Tyler Center for Global Studies for funding my research and professional development. I also want to extend my gratitude to the International College of Seville Staff for their help in my transition to life in Spain, assistance in language communication, and outreach support. Finally, I am grateful for the residents of Seville who generously shared their time and experiences with me during their interviews.

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