ILLINOIS
European Union Center
ILLINOIS GLOBAL INSTITUTE

Co-funded by the
Erasmus+ Programme
of the European Union

POLITICAL TRUST, THE EUROPEAN GREEN DEAL, AND THE 100 CITIES PROJECT

White Paper

Emanuel Rota

European Union Center | University of Illinois Urbana-Champaign

Table of Contents

POLITICAL TRUST, THE EUROPEAN GREEN DEAL, AND THE 100 CITIES PROJECT

This White Paper emerged from a collaborative research initiative funded by the European Union (*Jean Monnet/Horizon Europe*), the U.S. Department of Education, and the European Union Center at the University of Illinois Urbana-Champaign. Our project examined the EU's *100 Carbon Neutral Cities* initiative, with the goal of understanding its implementation and, ultimately, making its lessons available to urban contexts in the United States.

Recognizing the dual challenge of achieving carbon neutrality while maintaining public trust, particularly among marginalized communities, our research explored best practices in sustainable policy implementation. We concentrated on four key dimensions: citizen engagement (especially among subordinate groups), mechanisms for evaluating progress, energy policies and digital tools for urban participation, and the interplay between local, national, and supranational governance structures.

Rather than focusing solely on direct applicability to U.S. cities, the project sought to analyze European pilot experiences in order to provide insights that could inform future sustainability policies in comparable urban contexts. This white paper synthesized our findings, offering actionable knowledge for policymakers, researchers, and urban planners. The research culminated in an international conference in 2024, fostering dialogue and facilitating the exchange of best practices across transatlantic urban networks.

Special thanks to **Laura Hetel, Cara Wong, Peter Christensen, Jake Bowers, Sanjay Patel, Bill Sullivan, and Xinyuan Dai** for their invaluable contributions to this project. However, all mistakes and opinions expressed were solely mine, and they—along with the rest of the team—were entirely innocent of any errors or misjudgments.

INTRODUCTION

Political trust has become a central topic of analysis in recent years as scholars seek to understand its role in the functioning of modern democracies. It is widely regarded as essential to the stability and legitimacy of governance, influencing everything from voter participation to the implementation of public policy. As democratic institutions face increasing challenges—ranging from political polarization and economic inequality to corruption and the rise of populism—this

body of research has become even more pressing. The growing recognition of political trust as a crucial concept has spurred numerous analyses that explore the factors contributing to both its development and its erosion within political systems. This paper will examine political trust within the context of ecological governance, focusing on the European Green Deal (EGD) and the 100 Cities Project, highlighting how institutional design, policy communication, and governance approaches influence trust dynamics.

One common theme that emerges from recent scholarship is the complex and multifaceted nature of political trust. It cannot be understood in isolation from broader social, economic, and political dynamics. Many studies emphasize that political trust is not merely about confidence in the government; it also reflects citizens' broader perceptions of societal fairness, economic opportunity, and institutional effectiveness. While in the European context, political trust is often examined in relation to the legitimacy of the European Union, the effectiveness of supranational governance, and the role of member states in implementing EU policies, American scholars tend to focus on issues such as institutional gridlock, party polarization, and the erosion of trust in democratic processes. The different approaches highlight the diverse ways in which political trust manifests across political systems and regions.

The literature identifies several key concepts that shape political trust, including institutional performance, social cohesion, and economic inequality. Trust is frequently depicted as relational and contingent, fluctuating based on citizens' interactions with and perceptions of government institutions. Studies also suggest that trust is multidimensional, taking different forms—such as general trust in the government versus trust in specific political actors—depending on historical and cultural contexts. This variation underscores the importance of national political culture in shaping trust dynamics.

Context plays a critical role in determining levels of trust, as it is influenced by a country's political culture, historical trajectory, and the performance of its democratic institutions. Comparative studies indicate that nations with a long tradition of democratic governance tend to exhibit higher levels of political trust, while newer democracies or those undergoing political transitions face greater difficulties in fostering trust among citizens. Established democracies, such as those in Scandinavia, benefit from institutional transparency, social equality, and strong civic engagement, all of which contribute to higher levels of trust. Conversely, countries struggling with political instability or corruption—such as many post-

communist states in Europe—tend to exhibit lower levels of trust, with citizens viewing political institutions with suspicion and skepticism. Given that climate action depends on public trust in both political and scientific institutions, understanding the intersection between science, governance, and ecological crises is essential.

Scientific Trust & Governance

An increasingly prominent challenge in the literature on political trust is the intersection between science, ecology, and governance. As global environmental crises—such as climate change, biodiversity loss, and the transition to a green economy—become more pressing, trust in political and scientific institutions has gained renewed significance. Despite the growing importance of these issues, many existing works on political trust have not directly addressed the specific challenges posed by ecological and scientific crises. Yet, as the world faces an urgent need for collective action, trust in both political and scientific institutions will be central to the success of sustainability policies.

The erosion of trust in scientific institutions presents a significant obstacle to sustainability initiatives. Climate change denial and misinformation campaigns have contributed to declining trust in scientific expertise, undermining public support for environmental policies. Populist movements and political actors who challenge the scientific consensus on climate change have further deepened polarization on sustainability issues, exacerbating divisions in political trust. These trends suggest that future scholarship must expand to consider the role of science and ecology in shaping public perceptions of governance. As climate action becomes an increasingly central issue in global politics, understanding how trust interacts with environmental policies will be crucial to ensuring their success. As economic inequality and governance challenges shape public perception of large-scale sustainability initiatives, the Green Deal's success is contingent on addressing these disparities effectively.

The European Green Deal & Public Trust

The importance of political trust is particularly evident in the context of the European Green Deal. Launched in December 2019 against a backdrop of rising climate concerns, the Green Deal represents one of the EU's most ambitious policy initiatives, aiming to make Europe the first climate-neutral continent by 2050. While it was framed as a transformative project, its

implementation has been met with economic tensions, political distrust, and concerns about public support. The Green Deal's emphasis on decoupling economic growth from resource consumption aligns with broader global sustainability goals, but its success depends on overcoming key governance challenges.

Scholars differ in their interpretations of the Green Deal's broader implications. *Making the European Green Deal Work*by Dyrhauge and Kurze argues that the initiative builds upon existing EU sustainability policies rather than representing a radical break from the past. By contrast, *Deploying the European Green Deal* by Campins Eritja and Fernández-Pons highlights the Green Deal's external dimension, emphasizing its role in shaping international environmental governance through trade policies and diplomatic efforts. Despite these differing perspectives, both works acknowledge the central role of political trust in determining the Green Deal's success.

The Green Deal's ability to secure public and political support hinges on its perceived fairness and feasibility. While wealthier EU member states have the resources to invest in green industries, economically struggling nations, particularly those reliant on fossil fuels, face significant financial hurdles. Moreover, economic inequality and the uneven distribution of costs and benefits could threaten public support, as seen in previous protests against climate policies, such as the Yellow Vest movement in France. These dynamics underscore the importance of political trust in the Green Deal's implementation. Whether it ultimately succeeds in fostering a sustainable European future will depend on its ability to bridge economic divides, build trust in institutions, and secure broad-based public engagement.

Language of Trust in Climate Initiatives

The European Union's *100 Climate-Neutral and Smart Cities Mission* provides an instructive case study of how governance language can shape political trust. The mission's success depends not only on its policy design but also on the rhetoric used to frame its goals. Through strategic use of political rhetoric and technical guidance, the EU fosters collaboration and transparency among stakeholders. The mission is framed as a shared European project, with local governments encouraged to collaborate within a multi-level governance framework. Phrases such as "cities will start working on their Climate City Contracts" reinforce a collective effort, while the focus on "cooperation," "shared vision," and "collaboration between local and

national governments" explicitly calls for mutual trust among political entities at all levels. This emphasis on partnership encourages political buy-in, signaling that success depends on coordinated efforts and the sharing of responsibility.

Moreover, the documents reassure policymakers by acknowledging the complexities of implementing such an ambitious agenda. References to funding mechanisms like Horizon Europe and the Mission Platform managed by NetZeroCities demonstrate the EU's commitment to supporting cities with technical assistance and financial resources. This transparency helps mitigate concerns about the financial and logistical challenges of meeting climate goals, reinforcing political trust by offering local governments security and predictability.

In building political trust, the documents also prioritize citizen engagement, using language such as "citizens as active participants" and "co-designing their future urban environments." This inclusivity fosters a sense of involvement and ownership, ensuring that climate action is not a top-down process but one shaped by local communities. The emphasis on participatory governance strengthens the legitimacy of the mission and helps create long-term political commitment. This section builds on the previous discussions by examining the tangible implementation of trust-building mechanisms within urban climate governance.

Next Steps: Analyzing the 100 Cities Project

The *100 Climate-Neutral and Smart Cities Mission* presents a compelling framework for localized climate action, but its real impact will depend on how its governance structures translate into concrete outcomes. The next section will analyze the 100 Cities and their Climate City Contracts, assessing whether these agreements effectively foster political trust and enable inclusive governance at the local level. This analysis will explore whether the participatory rhetoric of the EU aligns with real-world implementation, identifying potential gaps between policy design and public trust-building in climate governance.

The 100 Climate-Neutral and Smart Cities Initiative: Selection, Characteristics, and Strategic Importance

The selection of cities for the EU Missions 100 Climate-Neutral and Smart Cities initiative appears to reflect a strategic approach, though the European Commission has not explicitly detailed its exact selection process. Analyzing the chosen cities suggests that factors

such as geographical diversity, economic significance, existing climate policies, and urban innovation potential may have played a role in determining which cities were included. These inferred criteria seem to aim at ensuring a broad representation of urban contexts, allowing for scalable climate solutions across different regions.

Criteria for Selection: Key Patterns and Strategic Considerations

One noticeable pattern appears to be geographical diversity, with cities spanning Northern, Southern, Eastern, and Western Europe, suggesting an effort to include a range of climate conditions, governance models, and infrastructural challenges. The inclusion of major metropolitan areas such as Paris, Berlin, and Madrid, alongside mid-sized cities like Tampere, Zaragoza, and Cluj-Napoca, and smaller cities such as Sønderborg, Liepāja, and Kranj, indicates an intention to test and implement sustainability solutions across various urban scales. Furthermore, the presence of non-EU cities from associated Horizon Europe countries, such as Reykjavík, Izmir, and Sarajevo, suggests that the initiative also aims to foster international collaboration beyond the EU's borders.

Another inferred criterion appears to be economic significance and sectoral representation. Many of the selected cities seem to function as key economic hubs, industrial centers, or research-driven innovation zones. Cities such as Milan, Munich, and Rotterdam appear to have been chosen partly due to their economic weight, where successful climate policies could have a ripple effect across industries. Meanwhile, Heidelberg, Leuven, and Espoo, known for their strong research institutions, seem positioned to drive climate innovation. Additionally, port cities like Barcelona, Marseille, and Gdańsk may have been selected to explore how decarbonization strategies can be applied to trade and maritime activities.

Another likely selection factor could be a city's existing climate ambitions and governance capacity. Many of the cities included in the initiative have previously demonstrated leadership in sustainability, whether through strong local climate policies, participation in past EU green initiatives, or public commitments to carbon neutrality. Cities such as Stockholm, Copenhagen, and Helsinki appear to be frontrunners in urban sustainability, while others like Lahti, Lyon, and Valencia have already been involved in high-profile climate projects, indicating that they may have been selected based on their readiness to implement large-scale transformations.

Finally, the selection suggests that the initiative also aims to include cities facing urgent environmental challenges, particularly in Southern and Eastern Europe, where climate vulnerabilities seem more pronounced. Cities like Athens, Limassol, and Thessaloniki appear to have been chosen due to their exposure to extreme heat and water scarcity, while others like Miskolc, Sofia, and Bucharest may require support to transition from carbon-intensive economies to greener urban models.

Regional Analysis of the Selected Cities

Northern Europe: Established Leaders in Climate Governance

Cities in Northern Europe are widely recognized for their advanced environmental policies and strong governance structures. The inclusion of Stockholm, Gothenburg, Malmö, Umeå, and Gävle in Sweden, alongside Copenhagen, Aarhus, and Sønderborg in Denmark, aligns with these nations' historical leadership in sustainability. Similarly, Helsinki, Espoo, Tampere, Lahti, and Lappeenranta in Finland are known for their investments in clean energy and sustainable urban planning. These cities serve as models for integrating climate action with economic development and social equity.

Western Europe: Economic and Industrial Centers with Sustainability Commitments

The selection of cities in Germany, France, Belgium, and the Netherlands indicates an emphasis on integrating sustainability with economic and industrial policy. Germany's representation includes Munich, Berlin, and Hamburg, which are among the country's largest economic centers, as well as Heidelberg, Aachen, Mannheim, and Münster, cities recognized for their innovation in research and technological advancements. Similarly, France's participation through Paris, Lyon, Marseille, Nantes, Bordeaux, Grenoble, and Dijon reflects a balance between capital-intensive economic hubs and cities with strong environmental governance. In Belgium, the presence of Brussels, Leuven, Antwerp, and La Louvière suggests a focus on policy-driven sustainability transitions, while Amsterdam, Rotterdam, The Hague, Eindhoven, Groningen, Utrecht, and Helmond in the Netherlands highlight the role of climate adaptation in urban resilience.

Southern Europe: Addressing Climate Vulnerabilities

The inclusion of cities from Spain, Italy, Portugal, and Greece appears to reflect the region's urgent need for climate adaptation, given its exposure to extreme weather events such as heatwaves and droughts. Madrid, Barcelona, Seville, Valencia, Zaragoza, Valladolid, and Vitoria-Gasteiz represent Spain's efforts to align economic growth with climate action. Italy's participation, through Milan, Rome, Florence, Turin, Bologna, Parma, Prato, Padova, and Bergamo, suggests a focus on integrating sustainability with industrial modernization and historic preservation. Portugal's selected cities—Lisbon, Porto, and Guimarães—illustrate the country's efforts to enhance urban resilience through energy transition initiatives. In Greece, the presence of Athens, Thessaloniki, Ioannina, Kalamata, Kozani, and Trikala indicates a commitment to sustainable tourism, green infrastructure, and decentralized energy production.

Central and Eastern Europe: Cities in Transition

The representation of Poland, Romania, Hungary, Slovenia, Latvia, Lithuania, Slovakia, and Bulgaria suggests an emphasis on supporting cities undergoing structural transitions. The selection of Warsaw, Krakow, Łódź, Rzeszow, and Wrocław in Poland reflects the country's gradual shift toward decarbonization while maintaining economic competitiveness. In Romania, Bucharest, Cluj-Napoca, and Suceava have been identified as cities positioned to lead sustainability initiatives in post-socialist urban environments. Hungary's participants—Budapest, Miskolc, and Pécs—illustrate the need for investment in green energy and mobility infrastructure. Similarly, Ljubljana, Kranj, and Velenje in Slovenia, as well as Liepāja in Latvia, Vilnius and Taurage in Lithuania, and Bratislava and Košice in Slovakia, highlight cities at different stages of sustainability transitions.

Non-EU Cities: Expanding Climate Diplomacy

The selection of 12 cities from non-EU Horizon Europe-associated countries suggests an effort to extend European climate governance beyond the bloc. Norway's Oslo, Stavanger, and Trondheim continue their long-standing leadership in sustainable urban development, while Iceland's Reykjavík exemplifies a city already powered by renewable energy. The United Kingdom's Bristol and Glasgow remain engaged in climate collaboration despite Brexit.

Turkey's Istanbul and Izmir reflect the country's efforts to align urban policies with EU climate standards, while Sarajevo (Bosnia and Herzegovina), Podgorica (Montenegro), and Elbasan (Albania) highlight sustainability efforts in the Western Balkans. Israel's Eilat, with its expertise in solar energy and desert sustainability strategies, presents a distinct case of climate adaptation.

Climate City Contracts: Governance and Implementation

The Climate City Contract (CCC) represents an innovative governance framework designed to guide urban centers toward climate neutrality. Distinguished from conventional policy commitments, CCCs are dynamic, participatory, and tailored to the distinct socio-economic and environmental contexts of each city. Although they are not legally binding, CCCs establish a robust accountability mechanism by delineating explicit climate commitments, investment strategies, and civic engagement frameworks.

Each CCC is co-developed through a multi-actor approach involving municipal authorities, private sector stakeholders, civil society organizations, and academic institutions. The Mission Platform, an EU-supported entity, provides technical, regulatory, and financial expertise to facilitate CCC implementation and adaptation.

Since its inception, the CCC model has catalyzed significant progress among participating municipalities. Notable developments include:

- **City Selection and Mission Integration:** In April 2022, the European Commission identified 100 cities from EU member states and 12 from associated nations to participate in the 100 Climate-Neutral and Smart Cities by 2030 initiative.
- **EU Mission Labeling:** By October 2024, 33 cities had been awarded the EU Mission Label in recognition of their substantial progress toward climate neutrality, facilitating improved access to financial and institutional resources.
- **Urban-Level Implementation:** Several cities have demonstrated tangible reductions in greenhouse gas emissions. For example, Barcelona reduced its emissions from 3.5 to 2.79 million metric tons over four years, while Copenhagen has already achieved a 75% reduction in CO_2 emissions since 2005 and remains on course to attain carbon neutrality by 2025.

Challenges and Structural Constraints

Despite these advancements, several significant obstacles remain:

- **Accountability and Enforcement Deficits:** Given that CCCs lack formal legal enforceability, their efficacy is contingent upon sustained political commitment and voluntary compliance.
- **Financial Shortfalls and Investment Risks:** The European Central Bank has projected a potential €83 billion annual funding deficit through 2030, posing a critical risk to achieving the initiative's objectives.
- **Deceleration in Renewable Energy Deployment:** The expansion rate of solar energy installations in Europe declined to 4% in 2024, attributed to aging grid infrastructures and diminishing consumer incentives, thereby jeopardizing renewable energy targets.
- **Municipal Capacity Variability:** The disparity in financial, administrative, and technical capacities across cities underscores concerns about uneven implementation, with well-resourced urban centers likely progressing at a markedly different pace compared to their less affluent counterparts.

Evaluating the Climate City Contracts

While CCCs constitute an ambitious and structured approach to urban climate governance, their success hinges on their ability to foster institutional trust, sustained civic engagement, and cross-sectoral coordination. The primary challenge lies in determining whether CCCs will serve as effective instruments for structural transformation or remain aspirational policy frameworks with limited enforcement mechanisms. Future analysis should assess whether these contracts effectively bridge the gap between policy rhetoric and measurable climate action, ensuring equitable progress across diverse urban contexts.

THE ITALIAN CASE

GEOGRAPHICAL AND ECONOMIC DISTRIBUTION OF ITALIAN CITIES IN THE INITIATIVE

The University of Illinois JM team visited the Italian cities included in the Climate-Neutral and Smart Cities initiative, engaging with local administrators to better understand the dynamics shaping their sustainability policies.

The Italian cities selected for the initiative are predominantly concentrated in the northern and central regions, reflecting the country's economic geography and urban development patterns. Cities such as Milan, Turin, Bologna, Florence, and Parma are key economic and industrial centers, characterized by strong manufacturing bases, research hubs, and financial activities. These cities also exhibit advanced governance structures and established climate policies, factors that likely contributed to their inclusion in the initiative.

The distribution of selected cities, however, reveals a striking absence of major urban centers from southern Italy, a region particularly vulnerable to climate change-related threats such as rising temperatures, desertification, and water scarcity. While the initiative includes cities known for their economic strength and institutional capacity to implement sustainability transitions, it largely overlooks areas where climate vulnerability is most acute. Southern Italy, including regions such as Sicily, Calabria, and Puglia, faces some of the most severe environmental risks in the country, yet no major cities from these regions are represented. This omission raises questions about the balance between economic feasibility and climate urgency in the selection process.

Instead, the initiative focuses on cities with established sustainability policies, strong institutional frameworks, and financial capacity to implement large-scale climate action. Milan, as Italy's financial capital, is well-positioned to leverage private and public funding for decarbonization projects. Turin, historically an industrial hub, has developed extensive energy transition programs, while Bologna and Florence combine strong governance with cultural heritage considerations in their sustainability strategies. Parma and Bergamo, although smaller, have positioned themselves as leaders in regional sustainability efforts, leveraging partnerships with research institutions and industry.

Despite the advantages of working with cities that already have well-developed governance and financial structures, the exclusion of southern cities raises concerns about

whether climate action is being targeted where it is most needed. Without addressing environmental challenges in the most climate-sensitive regions, the broader national transition toward climate neutrality may remain incomplete or uneven.

Key Initiatives Across Selected Cities

The Climate City Contracts (CCCs) and Climate Neutrality Action Plans vary significantly in scope and ambition across the selected cities, reflecting their distinct urban contexts and governance capacities.

- **Milan** has developed a highly structured climate plan focused on reducing emissions from buildings (which account for 57.4% of its total emissions), electrifying transport, and integrating circular economy principles into urban planning. The city employs a climate budgeting system to align municipal policies with sustainability targets and has implemented a real-time data monitoring system for emissions tracking.
- **Turin** has prioritized emissions monitoring through its Energy & Transition Data Room, an advanced system for tracking real-time energy consumption and emissions. The city's €21.8 billion investment plan for emissions reduction demonstrates a strong financial commitment to climate action.
- **Bologna** has focused on regulatory measures, particularly in the decarbonization of public buildings and the transport sector. It has established climate assemblies and citizen engagement programs, as well as an Energy Help Desk for residents.
- **Florence** faces a unique challenge in balancing emissions reductions with the constraints of preserving its historic architectural heritage. The city has incorporated tourism-related climate challenges into its strategy and has established a Smart City Control Room to integrate climate policies with urban governance.
- **Parma** has adopted a "living document" approach to its climate planning, continuously updating its policies based on stakeholder input and real-time data. The city's plan includes strong collaboration with regional energy agencies and research institutions.
- **Bergamo** has shaped its climate response around post-COVID recovery, linking urban sustainability to broader health and economic resilience strategies. Its 217 planned actions are heavily focused on emissions reductions in the building and transport sectors.

- **Prato** has taken an industrial decarbonization approach, given its economic reliance on manufacturing. The city has implemented extensive solar energy projects and urban transformation initiatives, such as the Prato Green Deal and Smart City Plan.

The breadth of approaches among these cities highlights the diversity of challenges and solutions within Italy's urban climate strategy. Milan and Turin have taken highly data-driven and financialized approaches, while cities like Parma and Bologna emphasize multi-level governance and social innovation.

Citizen Participation in Climate Governance

Citizen engagement plays a crucial role in determining the legitimacy and effectiveness of urban climate policies. The Climate-Neutral and Smart Cities initiative emphasizes participatory governance, but the degree and structure of citizen involvement vary significantly across the Italian cities.

- **Milan** stands out for its Permanent Citizens' Climate Assembly, a formalized structure that allows continuous public input into the city's climate policies.
- **Turin** has developed territorial labs and multi-level governance partnerships to integrate citizen perspectives into decision-making.
- **Bologna** and **Parma** have engaged residents through public consultations, energy help desks, and co-design workshops, ensuring that local communities have a role in shaping climate actions.
- **Prato** and **Bergamo** have experimented with digital participation tools such as Decidim, a platform for direct citizen input, and have integrated participatory planning into specific urban projects.
- **Florence**, despite facing challenges related to tourism and historic preservation, has introduced pilot climate assemblies but has yet to establish a long-term citizen engagement mechanism.

Cities with institutionalized engagement mechanisms, such as Milan and Turin, demonstrate a higher degree of political trust and alignment between policy goals and public expectations. In contrast, cities where citizen involvement remains ad hoc or project-specific may face difficulties in securing long-term social support for their climate initiatives.

Comparative Evaluation

The Italian cities within the Climate-Neutral and Smart Cities initiative exhibit distinct strengths and weaknesses in their approaches to climate governance.

Category	Milan	Turin	Florence	Bergamo	Parma
Climate Targets	60% CO_2 reduction by 2030, full neutrality by 2050	Sector-based reductions, no final goal	No clear long-term target	No clear final target	43.9% CO_2 reduction by 2030
Governance & Coordination	Public-private partnerships, Permanent Climate Assembly	Energy & Transition Data Room, multi-stakeholder governance	Climate Task Force, less multi-sector integration	Urban Ecosystem Model, but weaker regional/national coordination	Multi-Level Governance Model, including AESS
Funding & Investment Plan	Strong investment partnerships with banks, businesses, and public funds	€21.8B for emissions reduction, lacks private sector clarity	Reliance on public funds, no clear private sector integration	No clear financial structure, reliant on external grants	Well-structured investment roadmap
Stakeholder Engagement	Permanent Citizens' Climate Assembly, public-private collaboration, digital engagement tools	Thematic Roundtables, territorial labs	Pilot Climate Assembly (2023), limited engagement	Participatory urban projects, lacks long-term mechanisms	Comprehensive multi-sector stakeholder engagement

Transport Electrification	100% electric buses by 2030, major metro expansion	EV-friendly policies, lacks a clear zero-emission fleet commitment	Public transport upgrades, but no full electrification commitment	Some pilot sustainable mobility projects, lacks city-wide electrification plan	Integrated mobility decarbonization strategy

The varying degrees of progress across these cities suggest that political trust—both in governance institutions and in citizen participation mechanisms—plays a critical role in shaping climate policy effectiveness. However, the broader challenge remains: ensuring that climate action is equitably distributed across Italy's diverse regions, particularly in areas most at risk from climate change.

- Milan, Turin, Florence, Bergamo, and Parma demonstrate different strengths in climate governance, investment strategies, and stakeholder engagement.
- Milan leads in structured governance, financial integration, and extensive stakeholder participation, making it one of the most advanced cities in climate action implementation.
- Turin excels in emissions monitoring and governance but lacks long-term policy clarity and deep citizen engagement.
- Florence faces significant constraints due to heritage preservation regulations, which slow its ability to implement infrastructure modernization and energy retrofits.
- Parma has well-defined climate targets, strong governance, and clear funding mechanisms, making it more structured in climate action execution.
- Bergamo focuses on participatory urban projects and resilience but lacks concrete implementation plans and structured financial strategies.

COMPARATIVE TABLES

MILAN AND TURIN

Category	Milan	Turin	Key Differences
Climate Targets	60% CO_2 reduction by 2030, full neutrality by 2050	Unspecified final goal, more focused on sector-based reductions	Milan has clearer and more ambitious long-term targets.
Governance & Coordination	Strong public-private partnerships (Milan Alliance for Air & Climate) + Permanent Climate Assembly	Energy & Transition Data Room to track emissions + multi-stakeholder governance	Turin has a strong data hub, but Milan has better integration of stakeholders.
Funding & Investment Plan	Well-structured investment partnerships with banks, businesses, and public funds	Estimated €21.8B for emissions reduction, €5.3B for offsets but with less clarity on private sector involvement	Milan has a better-defined funding structure, while Turin has large estimated costs but uncertain implementation.
Stakeholder Engagement	Permanent Citizens' Climate Assembly, public-private collaboration, open data tools	Thematic Roundtables, territorial labs, but weaker long-term citizen oversight	Milan institutionalizes citizen participation, while Turin's engagement is more advisory.
Smart City & Data Use	Real-time tracking for air quality, emissions, and energy use	Energy & Transition Data Room monitors emissions but lacks broader urban tracking	Milan integrates broader Smart City initiatives.
Transport Electrification	100% electric buses by 2030, major metro expansion	EV-friendly policies, but lacks a clear zero-	Milan has more aggressive transport decarbonization.

		emission fleet commitment	
Building Decarbonization	Large-scale energy retrofits, renewable district heating, climate budgeting	Focused on energy efficiency, but lacks clear heat decarbonization plans	Milan leads in holistic building decarbonization.

MILAN AND FLORENCE

Category	**Milan**	**Florence**	**Key Differences**
Climate Targets	60% CO_2 reduction by 2030, full neutrality by 2050	No clear long-term target	Milan has concrete targets, while Florence has uncertain climate neutrality pathways.
Governance & Coordination	Public-private partnerships, strong governance model	Climate Task Force, but less multi-sector integration	Milan's governance is more collaborative and institutionalized.
Funding & Investment Plan	Strong partnerships with private sector and financial institutions	More reliance on public funds, no clear private sector integration	Florence lacks a structured financial investment strategy.
Stakeholder Engagement	Permanent Climate Assembly, multi-sector collaboration, digital engagement tools	Pilot Climate Assembly (2023), limited engagement beyond government	Milan has permanent, structured citizen participation.
Heritage & Tourism Constraints	Balances historic preservation with modern infrastructure	Historic preservation limits climate policies, no strong tourism-related policies	Florence is limited by UNESCO heritage rules, slowing climate actions.

Transport Electrification	100% electric buses by 2030, metro expansion	Public transport upgrades, but no full electrification commitment	Milan's plan is more ambitious and concrete.
Building Decarbonization	Strong energy retrofits & renewable district heating	Limited options due to heritage protection laws	Florence faces stronger legal constraints on retrofits.

BERGAMO AND PARMA

Category	Bergamo	Parma	Key Differences
Climate Targets	No clear final target but focused on NetZeroCities methodology	43.9% CO_2 reduction by 2030, with structured implementation plan	Parma has a concrete emissions reduction goal, while Bergamo remains conceptual.
Governance & Coordination	Urban Ecosystem Model, but weaker regional/national coordination	Multi-Level Governance Model, including AESS (Agency for Energy and Sustainable Development)	Parma has stronger governance integration, while Bergamo's ecosystem model is more decentralized.
Funding & Investment Plan	No clear financial structure, actions depend on external grants	Well-structured investment roadmap, clear funding mechanisms	Parma has a defined investment strategy, Bergamo lacks structured funding.
Stakeholder Engagement	Participatory urban design projects (e.g., Malpensata district) but no long-term mechanisms	Comprehensive stakeholder engagement, involving businesses, academia, and associations	Parma integrates long-term multi-sector collaboration, while Bergamo's approach is more project-based.

Monitoring & Data Use	Limited climate data tracking, lacks ongoing monitoring tools	GHG Emissions Baseline (2019) and continuous updates	Parma monitors and updates progress regularly, while Bergamo lacks structured tracking.
Renewable Energy & Efficiency	Focus on resilience, but lacks specific deployment goals	District heating, energy retrofitting, and renewables expansion	Parma is more advanced in energy transition.
Transport & Mobility	Some pilot sustainable mobility projects, lacks city-wide electrification plan	Integrated mobility decarbonization strategy, including EV infrastructure	Parma has a clearer path to sustainable mobility, while Bergamo is still in early-stage initiatives.

Political Trust and Citizen Participation in Transnational Climate Governance: A Comparative Perspective

Climate neutrality is not merely a technical challenge but a test of governance, demanding high levels of public trust to implement policies that directly reshape daily life. The shift away from fossil fuels, the redesign of urban spaces, and the transformation of transportation and energy systems all require widespread public buy-in. Without legitimacy, even the most ambitious climate policies can encounter resistance, delays, or outright rejection.

Milan, Barcelona, Madrid, The Hague, and Stockholm exemplify different models of governance, each reflecting distinct approaches to building trust, fostering participation, and engaging citizens in climate action. These cities share economic influence, policy ambition, and urban complexity but operate under unique political cultures and governance frameworks, offering valuable insights into the relationship between trust and climate governance.

GOVERNANCE STRUCTURES AND PUBLIC TRUST

Each of these cities has developed governance models that attempt to balance technical expertise, political oversight, and public legitimacy.

Milan integrates climate governance directly into municipal structures, with a **Permanent Citizens' Climate Assembly** playing a central role in shaping sustainability policies. By embedding climate neutrality into financial planning through a **climate budgeting system**, Milan fosters trust by demonstrating that its policies are backed by tangible investments. This institutionalized approach links climate action to long-term political accountability, reducing the perception of climate policy as an abstract or short-term concern.

Barcelona has taken participatory governance even further, embedding citizens' councils, advisory boards, and **participatory budgeting** into its climate strategy. With over 2,000 organizations engaged in the **Barcelona + Sustainable** network, the city has positioned itself as a leader in co-creating policy with civil society. Trust in governance is built through continuous dialogue, where citizens, businesses, and community groups actively shape decisions rather than merely reacting to them.

Madrid, by contrast, places a stronger emphasis on stakeholder collaboration, integrating businesses, unions, and institutional actors into decision-making through **Local Climate Platforms**. While citizens are consulted, the process is less direct than in Milan or Barcelona. Instead, Madrid relies on transparency and reporting to maintain public confidence, ensuring policy continuity while limiting avenues for direct citizen influence.

The Hague follows a similar path, structuring its climate governance around the **Hague Climate Agreement (HKA)**, which brings together over 160 stakeholders, including businesses, universities, and civic organizations. By distributing responsibility across multiple actors, this model secures institutional buy-in but offers fewer formal mechanisms for direct public participation.

Stockholm represents yet another model, where trust is built through **technocratic transparency**. The city prioritizes data accessibility, allowing residents to track emissions reductions and energy efficiency through digital platforms. While this ensures public awareness, decision-making remains concentrated within expert-led institutions, making citizen influence more indirect.

These governance structures illustrate different approaches to securing trust. Milan and Barcelona embed citizen participation into institutional frameworks, reinforcing a sense of collective responsibility. Madrid and The Hague balance institutional and public trust, ensuring stakeholders shape decisions while citizens remain engaged through consultation. Stockholm, in contrast, builds confidence through data-driven transparency, prioritizing accountability over direct participation.

Citizen Engagement: Co-Creation vs. Transparency

While the Climate-Neutral and Smart Cities initiative emphasizes engagement, how cities involve their citizens varies based on governance traditions and political culture.
Milan and Barcelona stand out for their institutionalized participation. Milan's **Permanent Citizens' Climate Assembly** gives randomly selected residents a formal voice in decision-making, ensuring that policies reflect public concerns. Barcelona has developed one of the most advanced participatory systems in Europe, with **citizen councils, climate advisory groups, and participatory budgeting** enabling residents to propose and vote on climate-related projects. In these cities, public involvement is not merely consultative—it is integrated into the governance process itself.

Madrid and The Hague take a more stakeholder-driven approach. Madrid's **Local Climate Platforms** serve as advisory groups where representatives from different sectors contribute to sustainability plans. The Hague's **HKA framework** ensures institutional coordination but offers fewer opportunities for direct public input beyond structured consultations. In both cities, participation is mediated through organizations, making it more structured but also more distant from everyday citizens.

Stockholm follows a different model, prioritizing **transparency over participation**. The city invests heavily in **open data platforms**, allowing residents to monitor emissions reductions and urban sustainability initiatives. While this approach fosters trust through accountability, it does not provide the same level of direct influence as the participatory models of Milan or Barcelona.

The contrast between these approaches highlights how cities navigate the challenge of legitimacy. Milan and Barcelona create **co-ownership** of climate action, ensuring that citizens feel like active contributors rather than passive recipients of policy. Madrid and The Hague

secure institutional legitimacy by involving key economic and civic actors, fostering trust through structured engagement. Stockholm, in turn, guarantees accountability through transparency, relying on data to sustain public confidence.

Political Resistance and Policy Legitimacy

How cities implement climate measures also affects their legitimacy and the level of political resistance they encounter. Policies that transform urban life—such as **low-emission zones, pedestrianization, and mobility restrictions**—often face initial opposition but can gain long-term public support when implemented through inclusive decision-making. Barcelona's **Superblocks** initiative, which drastically reduces car traffic in selected areas, initially met resistance but gradually gained acceptance through participatory design. Milan's **transport electrification strategy and climate budgeting** were similarly well-received because they were embedded in long-term governance structures that provided financial and institutional stability.

Madrid's experience with **Low-Emission Zones (LEZs)** illustrates the risks of implementing strong policies without extensive public participation. While the zones significantly reduced air pollution, they faced backlash over perceived mobility restrictions. Madrid's reliance on stakeholder collaboration rather than direct citizen engagement may have contributed to the resistance, as residents felt less involved in shaping the transition. The Hague's emphasis on multi-stakeholder agreements ensured broad institutional support for **energy efficiency policies**, but the lack of strong enforcement mechanisms meant that climate measures were not always implemented at the pace required to meet ambitious targets. Meanwhile, Stockholm's **zero-emission zones and electrified transport investments** encountered minimal resistance, reflecting both Sweden's long-standing environmental commitment and public trust in technocratic governance.

COMPARING CLIMATE PLANS AND STAKEHOLDER ENGAGEMENT

COMPARATIVE TABLES:

Climate Strategy Comparison

Category	Madrid	Milan	Barcelona	The Hague	Stockholm
Climate Targets	Committed to climate neutrality by 2030	60% CO_2 reduction by 2030, full neutrality by 2050	50% reduction in emissions by 2030, full neutrality by 2050	Aims for climate neutrality by 2030	Net-zero emissions by 2030, fossil-free by 2040
Governance & Coordination	Aligns with EU climate policies, integrated with regional and national support	Public-private partnerships, strong governance model	Climate Emergency Plan, integrated governance with multiple stakeholders	Multi-level governance with national and EU collaboration	Integrated within municipal governance, part of the national climate strategy
Funding & Investment Plan	Investment plan tied to EU and national funding, city-specific financial strategies	Well-structured investment partnerships with banks, businesses, and public funds	Relies on a mix of public funds and innovative financial mechanisms	EU-backed funding plans, additional municipal investments	Structured investment plans, leveraging EU and local funds
Stakeholder Engagement	Emphasizes public-private collaboration, including businesses	Permanent Climate Assembly, multi-sector collaboration, digital	Strong citizen participation, co-creation with local organizations	High citizen involvement through Climate Agreements and city-	Multi-sector stakeholder engagement, active role for businesses and citizens

	and civil society	engagement tools		wide participation	
Smart City & Data Use	Smart city innovations, data-driven climate strategies	Real-time tracking for air quality, emissions, and energy use	Developing real-time urban climate monitoring systems	Exploring smart solutions for urban sustainability	Comprehensive climate monitoring, integration of AI-driven analysis
Transport Electrification	Targets urban mobility transformation with electrification initiatives	100% electric buses by 2030, major metro expansion	Electrification of transport fleets, expansion of public transport	Sustainable mobility projects, incentives for EV adoption	Ambitious electrification of public and private transport, congestion pricing
Building Decarbonization	Comprehensive energy retrofits and district heating improvements	Large-scale energy retrofits, renewable district heating, climate budgeting	Focused on sustainable materials, heritage-conscious decarbonization	Focus on green construction and emission-free urban spaces	Extensive energy-efficient retrofits, bio-energy carbon capture solutions

The Role of Trust in Climate Governance

The success of urban climate strategies depends as much on governance and public participation as on technology and funding. Milan and Barcelona represent the most participatory models, ensuring strong public legitimacy through formal engagement mechanisms. Madrid and The Hague emphasize stakeholder inclusion, balancing institutional trust with indirect citizen

involvement. Stockholm relies on technocratic transparency, maintaining high public confidence in climate policy without widespread participation in decision-making.

The comparison of these five cities demonstrates that trust in climate governance is not just a matter of policy effectiveness but also of decision-making processes and stakeholder involvement. Whether through direct citizen participation, stakeholder collaboration, or data-driven accountability, establishing legitimacy remains a critical challenge for climate neutrality efforts across Europe.

Geographical and Economic Distribution of Cities in the Initiative: Kranj, Porto, and Gävle

The selection of Kranj, Porto, and Gävle for the Climate-Neutral and Smart Cities initiative reflects diverse regional, economic, and environmental challenges that shape their respective approaches to climate action. Kranj, Slovenia's third-largest city, has positioned itself as a regional economic and technological hub, leveraging its Alpine location and strategic transport corridors. Porto, Portugal's second-largest metropolitan area, is a historic, densely populated urban center with strong ties to tourism, finance, and emerging technology sectors. Gävle, located in Sweden, plays a crucial role in the national logistics network and has a strong industrial and public sector economy, particularly in forestry and construction.

While each of these cities faces different climate risks and economic constraints, they share the ability to leverage existing governance frameworks and institutional capacity to implement sustainability transitions. However, key differences emerge in their economic profiles and emissions drivers. Kranj's emissions are largely tied to transport and heating, exacerbated by reliance on fossil fuels. Porto, despite a relatively low industrial emissions profile, sees its highest emissions from buildings and transport. Gävle's major challenges stem from transport emissions and construction-related carbon footprints, particularly in steel and cement usage.

A direct comparison highlights how national contexts shape climate challenges and policy responses. Kranj's relatively small size gives it greater municipal control over climate initiatives but limits its ability to influence transport emissions from major transit routes. Porto, by contrast, operates within a densely populated and historically significant urban environment where space constraints and infrastructure adaptation pose significant obstacles. Gävle, with its

extensive land area and lower population density, faces a different challenge—scaling renewable solutions across a dispersed geography while addressing the embedded emissions of its construction and logistics sectors.

Although these cities have been selected for their capacity to implement large-scale climate action, their inclusion also raises questions about the distribution of climate efforts within their respective countries. In Slovenia, Kranj is a leader in climate transition efforts, while other regions with potentially greater vulnerabilities remain unrepresented. Porto stands out as a national leader in Portugal's urban sustainability movement, yet its metropolitan dynamics necessitate broader regional cooperation. Gävle's ambitious target to become climate-neutral by 2030 aligns with Sweden's national goals, but challenges in transportation and private sector engagement may influence its overall impact.

Key Initiatives Across Selected Cities

The Climate City Contracts (CCCs) and Climate Neutrality Action Plans vary in scope and ambition, reflecting each city's specific urban challenges and governance strengths.

- **Kranj** aims for an 80% reduction in CO_2 emissions by 2030, with a strong focus on renewable energy integration (90% in district heating), transport decarbonization (reducing daily car commuting by 30%), and expanding solar energy production to 55,000 MWh. The city has developed a **Smart Kranj Platform** to enhance digital governance and public engagement.
- **Porto** has committed to an 85% reduction in emissions by 2030, prioritizing green infrastructure expansion, shared mobility, electrification of transport, and circular economy practices. The **Porto Climate Pact** plays a central role in engaging citizens and businesses, yet behavioral shifts and financial mobilization remain key challenges.
- **Gävle** has one of the most ambitious climate plans, targeting full climate neutrality for **territorial emissions by 2030** and **consumption-based neutrality by 2035**. The city's primary focus areas include transport decarbonization, circular construction practices, and integrating sustainable urban development into its **Environmental Strategic Program**.

While all three cities have comprehensive action plans, Kranj and Porto rely heavily on governance-driven incentives, whereas Gävle integrates broader systemic approaches, particularly in addressing consumption-based emissions.

Political Trust and Governance in Climate-Neutral Cities: Comparative Insights from Kranj, Porto, and Gävle

Citizen engagement varies significantly across the three cities, influencing the legitimacy and effectiveness of their climate strategies.

- **Kranj** has developed the **Smart Kranj Platform**, a digital initiative to involve citizens in climate actions. Additionally, a **one-stop shop for climate-neutral initiatives** is being established to foster public participation.
- **Porto** has introduced the **Porto Climate Pact**, which includes 538 individual and 228 institutional subscribers, creating a participatory framework for businesses and residents. The city also runs the **Porto Climate Pact Talk Series**, fostering continuous dialogue on climate neutrality.
- **Gävle** integrates citizen engagement through **public consultations** and **local action groups**, but its greatest challenge remains in changing transport behavior, which accounts for the highest share of emissions.

Porto leads in structured citizen participation, leveraging a broad network of stakeholders and institutionalized dialogue platforms. Kranj, though advancing its participatory framework, remains in the early stages of fully integrating public engagement mechanisms. Gävle, while promoting transparency in climate policy, faces structural barriers in mobilizing citizens around complex transport and infrastructure shifts.

Comparative Evaluation

Each city presents distinct strengths and weaknesses in its approach to climate neutrality:

- **Kranj** has a strong governance model and a digital engagement strategy, but its heavy reliance on fossil fuels for heating presents a significant challenge.
- **Porto** demonstrates a highly participatory model and robust urban sustainability actions but struggles with financial constraints and citizen behavioral changes in transport and energy use.

- **Gävle** leads in systemic change by targeting both **territorial and consumption-based emissions**, yet faces uncertainties in its **transport transformation and construction decarbonization efforts**.

A direct comparison of these cities shows how governance capacities shape climate action. Porto and Gävle have leveraged strong regional and national networks to advance their decarbonization agendas, while Kranj has focused on local implementation with limited national coordination. Porto's dense urban environment requires highly integrated solutions for mobility and energy efficiency, whereas Gävle's expansive land area provides opportunities for large-scale renewable projects but also poses challenges in ensuring broad participation and behavioral shifts.

Broader Political and Strategic Considerations

The alignment of these cities' Climate City Contracts with national and EU policies varies in scope and ambition:

- **Kranj** follows Slovenia's national climate strategy but stands out as a leader among Slovenian cities.
- **Porto** exceeds national climate targets, pushing for deeper emissions reductions than required by Portugal's Climate Law.
- **Gävle** aligns closely with Sweden's national climate targets but distinguishes itself with its dual focus on **territorial and consumption-based emissions**.

Political and economic factors will shape the success of these initiatives. **Funding availability, regulatory frameworks, and political commitment** remain crucial determinants. While all three cities demonstrate strong institutional capacity, their broader impact will depend on how effectively they navigate financial constraints, governance challenges, and citizen participation in climate action.

Comparing Climate Plans and Stakeholder Engagement in European Cities: Kranj, Porto, and Gävle

Summary of Findings

- **Kranj, Porto, and Gävle** all aim for climate neutrality by **2030**, but their strategies differ based on governance structures, financial mechanisms, and citizen engagement.

- **Gävle** has the most ambitious approach, targeting both **territorial emissions neutrality by 2030 and consumption-based neutrality by 2035**.
- **Porto** places a strong emphasis on **public-private cooperation** through the **Porto Climate Pact**, engaging businesses and citizens in the transition.
- **Kranj** focuses on **digital governance, smart city initiatives, and renewable energy integration** to meet its emissions reduction goals.

Comparative Tables:

Category	Kranj	Porto	Gävle
Climate Targets	80% CO_2 reduction by 2030 (from 2018 baseline)	85% CO_2 reduction by 2030 (from 2019 baseline)	Climate neutrality by 2030, full neutrality (including consumption-based emissions) by 2035
Governance & Coordination	Integrated with **municipal governance**, aligns with **Slovenia's national climate strategy**	Multi-stakeholder model through the **Porto Climate Pact**, strong regional cooperation	Embedded within the **Environmental Strategic Program (MSP 2.0)**, aligned with **Sweden's national climate targets**
Funding & Investment Plan	Mix of **public and private**investments, leveraging **EU and national programs**	**Challenges in attracting private investment**, relies on municipal funding and **EU support**	**Climate investment plan integrated with municipal strategies**, funding allocations yet to be finalized
Stakeholder Engagement	**Smart Kranj Platform** (digital participation), **one-stop shop for climate action**	**Porto Climate Pact (538 individuals, 228 institutions)**, co-creation initiatives	**Public consultations**, **citizen-led climate action groups**, but transport behavior change remains a challenge

Smart City & Data Use	**City data digital platform**, real-time monitoring of climate actions	**Urban climate monitoring**, integration of AI-driven analysis, **Climate Pact Talk Series**	**Strong data-driven planning**, but lacks a comprehensive real-time monitoring system
Transport Electrification	**Target: one car per household**, reduce daily car commuting by **30%**, smart public transport initiatives	**Expansion of shared mobility and electrification**, reducing motorized transportation	**Sustainable mobility projects**, focus on **public transport electrification**and **cycling infrastructure**
Building Decarbonization	**90% renewable energy** for district heating, large-scale **solar energy expansion (55,000 MWh)**	**Energy efficiency upgrades**, strong **circular economy focus**	**Emission-free construction** with **sustainable materials**, targeting **steel and cement decarbonization**

This table highlights the **contrasting approaches** taken by the three cities:

- **Kranj** leverages **digital innovation and renewable energy** to drive its transition.
- **Porto** builds on **strong stakeholder engagement** but faces **financial and behavioral challenges** in implementation.
- **Gävle** leads in **systemic emissions reduction**, integrating **territorial and consumption-based neutrality**, yet **transport decarbonization remains a major challenge**.

Climate Governance and Urban Transformation: Comparative Insights from Zaragoza, Heidelberg, and Leuven

Geographical and Economic Distribution of Selected Cities

The selection of Zaragoza, Heidelberg, and Leuven for the Climate-Neutral and Smart Cities initiative reflects a diverse range of regional, economic, and governance contexts. These

cities vary in their industrial structures, urban development trajectories, and institutional frameworks, yet they share a commitment to systemic transformation toward climate neutrality by 2030.

Zaragoza, a key regional capital in Spain, integrates its climate strategy within Spain's **National Energy and Climate Plan (PNIEC)** while leveraging its strong position as a logistical and industrial hub. Heidelberg, known for its long-standing environmental leadership, aligns its climate neutrality targets with Germany's federal policies, benefiting from its **established municipal climate governance** and rigorous emissions tracking frameworks. Leuven, a mid-sized innovation leader in Belgium, has built its climate strategy on an **inclusive governance model**, actively engaging stakeholders through **Leuven 2030**, which unites businesses, academia, civil society, and municipal authorities.

While these cities share a commitment to climate neutrality, their approaches highlight structural differences. Zaragoza prioritizes **infrastructure investment**, focusing on building retrofits, electrified transport, and district heating expansion. Heidelberg builds on **institutionalized climate governance**, embedding policies within broader municipal energy efficiency frameworks. Leuven pursues an **integrated, bottom-up approach**, emphasizing stakeholder collaboration and innovative financing mechanisms to scale climate action.

Key Initiatives Across Selected Cities

The Climate City Contracts (CCCs) and Climate Neutrality Action Plans differ in scope and ambition, reflecting the distinct urban contexts of Zaragoza, Heidelberg, and Leuven:

- **Zaragoza** aims for an **80% CO_2 reduction by 2030**, leveraging €3.9 billion in investments. The city prioritizes **district heating expansion, electrification of transport, and circular economy integration**.
- **Heidelberg** targets full **climate neutrality for municipal administration by 2030** and city-wide neutrality by 2040. It relies on **BISKO accounting for emissions tracking, municipal energy efficiency strategies, and public-private partnerships**.
- **Leuven** takes a **participatory approach**, utilizing **Leuven 2030** to drive climate action. The city integrates **data-driven emissions monitoring, net-zero building initiatives, circular construction, and sustainable mobility** as key pillars.

While Zaragoza benefits from **strong EU and national funding mechanisms**, Heidelberg's **institutionalized climate governance** ensures continuity and accountability, and Leuven's **multi-stakeholder model** fosters deep civic participation and financial innovation.

Citizen Participation in Climate Governance

Citizen engagement plays a crucial role in determining the legitimacy and effectiveness of climate strategies. However, the level and structure of participation vary across these cities:

- **Zaragoza** integrates public input through **CitiES 2030**, fostering **citizen dialogues and climate forums**. However, its engagement model remains structured around **municipal decision-making and expert-led policy design**.
- **Heidelberg** has an **established municipal climate council** and a long-standing culture of environmental governance, though its participation mechanisms focus more on **technical expertise and institutional coordination** rather than grassroots involvement.
- **Leuven** stands out for its **deep participatory model**, with **Leuven 2030 ensuring equal representation** of civil society, businesses, knowledge institutions, and government actors in climate strategy development.

While Leuven has the most **institutionalized and inclusive** participatory approach, Heidelberg leverages **municipal expertise and intergovernmental coordination**, and Zaragoza focuses on **structured engagement within municipal programs**.

Comparative Evaluation

Each city exhibits distinct strengths and weaknesses in its climate governance approach:

- **Zaragoza** benefits from **strong investment frameworks and infrastructure-focused policies**, but its **top-down governance structure** may limit deep stakeholder engagement.
- **Heidelberg** has a **well-established institutional framework**, ensuring **continuity and accountability**, yet its citizen participation model is **less expansive** than that of Leuven.

- **Leuven** leads in **bottom-up governance and participatory climate action**, but its reliance on **stakeholder-driven financing models** may pose challenges for scaling investments.

Broader Political and Strategic Considerations

The integration of climate neutrality targets within national and European frameworks influences the strategic direction of each city:

- **Zaragoza** aligns with **Spain's National Energy and Climate Plan (PNIEC)**, ensuring **robust national and EU financial support**.
- **Heidelberg** integrates its strategies within **Germany's federal and regional climate policies**, leveraging **existing environmental governance structures**.
- **Leuven** actively pursues **innovative financing and collaboration models**, though its **decentralized approach**may require further policy coordination at the regional and national levels.

While all three cities demonstrate strong **institutional capacity**, their success in achieving climate neutrality will depend on **governance adaptability, financial resource mobilization, and citizen participation**.

Comparative Tables:

Summary of Findings

- **Zaragoza, Heidelberg, and Leuven** all aim for climate neutrality by 2030 but apply different approaches based on governance models, financing structures, and stakeholder engagement.
- **Heidelberg** builds on its long-standing climate policies, integrating an advanced municipal-led governance model with strong institutional partnerships.
- **Leuven** leverages a **collaborative governance model** with multi-stakeholder engagement through **Leuven 2030**, ensuring **broad participation** across civil society, businesses, and public institutions.

- **Zaragoza** aligns its strategy with **Spain's national climate policies**, integrating climate action into regional and municipal frameworks while **leveraging EU funding** for large-scale infrastructure transitions.

Comparing Climate Plans and Stakeholder Engagement in European Cities: Zaragoza, Heidelberg, and Leuven

Category	Zaragoza	Heidelberg	Leuven
Climate Targets	Climate neutrality by 2030, 80% CO_2 reduction from business-as-usual scenarios	Full climate neutrality by 2030 (municipal administration), city-wide neutrality by 2040	Climate neutrality by 2030, integrating systemic transition pathways
Governance & Coordination	Multi-level governance model, aligned with **Spain's National Energy and Climate Plan (PNIEC)** and regional policies	**Established municipal climate governance**, integrated into the **100% Climate Protection Master Plan**	**Leuven 2030 multi-stakeholder model**, strong ecosystem collaboration
Funding & Investment Plan	Estimated **€3.9 billion investment**(2020–2030), leveraging **EU, national, and municipal resources**	Climate financing integrated with **municipal investment plans**, using local and federal German funding	**Innovative financing mechanisms**, linking public-private partnerships and EU investments
Stakeholder Engagement	Broad stakeholder inclusion through **CitiES 2030**, climate forums, and local engagement processes	**Municipal climate council**, climate-focused business engagement, and citizen outreach programs	**Deep citizen engagement through Leuven 2030**, ensuring representation from businesses, academia, and civil society
Smart City & Data Use	**Real-time climate monitoring**, integration of	**Advanced emissions monitoring systems**,	**Data-driven governance**,

	digital platforms for emissions tracking	using **BISKO accounting methodology**	leveraging AI-based climate tracking solutions
Transport Electrification	Expansion of **sustainable urban mobility**, focus on public transport electrification	**Green district heating and electrification of public transport**, strong integration of pedestrian and cycling infrastructure	**Electric vehicle adoption incentives**, expansion of public transport and shared mobility networks
Building Decarbonization	Large-scale energy retrofits, **integration of district heating**, focus on **circular economy in construction**	**Municipal energy efficiency policies**, targeting full decarbonization of public buildings by 2030	**Climate-positive building policies**, focus on net-zero architecture and sustainable materials

---

KEY TAKEAWAYS

- **Zaragoza** focuses on large-scale infrastructure decarbonization, with a strong reliance on **national and EU funding**.
- **Heidelberg** integrates **long-standing climate governance frameworks**, embedding **emission reduction strategies** within local and federal planning.
- **Leuven** adopts a **bottom-up, participatory approach**, ensuring broad multi-stakeholder engagement and innovative investment models.

CLIMATE LEADERSHIP IN MID-SIZED CITIES: COMPARATIVE INSIGHTS FROM THESSALONIKI, KLAGENFURT, AND LAHTI

GEOGRAPHICAL AND ECONOMIC CONTEXT OF SELECTED CITIES

The selection of Thessaloniki, Klagenfurt, and Lahti for the Climate-Neutral and Smart Cities initiative reflects their strategic roles in pioneering sustainability transitions at a mid-sized

urban scale. Each city is implementing ambitious climate policies shaped by its regional economic structure, governance model, and emissions profile.

Thessaloniki, Greece's second-largest city, serves as a key urban center in the Balkans and the Mediterranean, facing significant climate vulnerabilities due to rising temperatures and extreme weather events. Its climate action strategy is integrated within Greece's **national energy transition framework**, leveraging **EU funding and systemic resilience strategies** to mitigate these risks.

Klagenfurt, the capital of Carinthia in Austria, leads a **regional sustainability approach** focused on **energy autonomy, transport electrification, and circular economy principles**. With a smaller population than Thessaloniki but strong regional leadership, Klagenfurt aligns its climate policy with **Carinthia's long-term environmental goals**.

Lahti, a Finnish pioneer in environmental sustainability, is one of **Europe's most advanced cities in climate action**. It aims for **climate neutrality in municipal operations by 2025** and complete neutrality by 2030, leveraging **strong circular economy principles, citizen engagement, and cutting-edge emissions monitoring frameworks**.

Despite their differences in scale and economic structure, these cities share a commitment to urban sustainability, decarbonization, and systemic innovation within their respective national contexts.

Key Initiatives Across Selected Cities

The Climate City Contracts (CCCs) and Climate Neutrality Action Plans vary in scope and ambition, reflecting the unique challenges faced by each city:

- **Thessaloniki** aims for **climate neutrality by 2030**, prioritizing **emissions reduction in transport, energy systems, and urban resilience strategies**. The city's roadmap integrates climate actions within Greece's **national energy policies** while leveraging **EU-backed investment mechanisms**.
- **Klagenfurt** is advancing **sustainable urban development**, focusing on **regional energy production, transport electrification, and circular economy principles**. The city integrates **public investment with EU and private-sector funding**, ensuring a structured approach to decarbonization.

- **Lahti** leads in climate action, with a highly advanced emissions reduction plan targeting **Scope 1 neutrality by 2025**. The city has institutionalized **climate budgeting**, ensuring that sustainability goals are embedded in all municipal financial planning and investment decisions.

Each city benefits from **multi-level governance**, but their approaches differ: Thessaloniki **relies heavily on national and EU support**, Klagenfurt **pursues regional integration**, and Lahti exemplifies a **municipally led, highly decentralized climate strategy**.

Citizen Participation in Climate Governance

Citizen engagement plays a critical role in ensuring public trust and long-term success in urban climate strategies. The three cities demonstrate varying levels of participatory governance:

- **Thessaloniki** fosters **public-private collaboration** through **urban resilience forums**, leveraging networks of **businesses, research institutions, and community organizations** to co-develop solutions.
- **Klagenfurt** has built **strong citizen-driven climate initiatives**, integrating **business and academic partnerships** to promote sustainability awareness and participation.
- **Lahti** leads in **participatory governance**, with **climate councils, citizen assemblies, and engagement platforms** such as **Lahti Environmental Watch**, which enables **real-time tracking of environmental progress** by residents.

While Lahti exhibits the most **institutionalized and transparent participatory model**, Klagenfurt emphasizes **community-driven innovation**, and Thessaloniki integrates engagement through **broader urban resilience planning efforts**.

Comparative Evaluation

Each city presents distinct strengths and challenges in its climate strategy:

- **Thessaloniki** prioritizes **resilience-building and large-scale investment**, but its **reliance on national frameworks** may pose challenges in localized implementation.

- **Klagenfurt** excels in **energy autonomy and transport electrification**, yet achieving **full climate neutrality by 2030** requires further integration of **circular economy policies**.
- **Lahti** is the most **advanced in climate governance**, leveraging **strong institutional support, emissions tracking, and financial integration**, yet its model may be **difficult to scale in larger urban environments**.

Broader Political and Strategic Considerations

These cities' climate efforts align with broader **EU and national climate targets**, yet their strategic focus varies:

- **Thessaloniki** embeds its approach within **Greece's national energy transition**, ensuring **robust EU financial backing**.
- **Klagenfurt** aligns with **Austria's federal and regional sustainability goals**, benefiting from **strong provincial governance**.
- **Lahti**, as a leader in **Finland's climate strategy**, exemplifies **municipal-led climate action**, setting **benchmarks for other mid-sized cities**.

While all three cities demonstrate strong **institutional capacity**, their ultimate success in achieving climate neutrality will depend on **governance adaptability, financial resilience, and effective citizen engagement mechanisms**.

Comparing Climate Plans and Stakeholder Engagement in European Cities: Thessaloniki, Klagenfurt, and Lahti

Summary of Findings

- **Thessaloniki, Klagenfurt, and Lahti** are **mid-sized cities (100K - 500K inhabitants)** pioneering urban sustainability through **innovative climate policies and governance structures**.
- **Lahti** is the most advanced in emissions reduction, aiming to be **climate-neutral for Scope 1 emissions by 2025**and continuing towards **full neutrality by 2030**.
- **Thessaloniki** integrates its climate action within **Greece's national energy transition framework**, leveraging **EU funding and systemic resilience strategies** to mitigate climate risks.

- **Klagenfurt** focuses on **regional energy autonomy, electrification of transport, and sustainable urban planning**, integrating **climate policy into its long-term municipal development strategy**.

Category	Thessaloniki	Klagenfurt	Lahti
Climate Targets	Climate neutrality by 2030, prioritizing emissions from **transport, energy, and urban resilience**	Climate neutrality by 2030, with focus on **local energy production, sustainable transport, and circular economy**	Climate neutrality for Scope 1 emissions by 2025, full neutrality by 2030
Governance & Coordination	Multi-level governance model, integrating EU and Greek national climate strategies	Strong municipal leadership, integrated within **Carinthia's regional sustainability plans**	Embedded in **Lahti Climate Programme**, linked with **Finnish national policies** and EU frameworks
Funding & Investment Plan	**EU-backed investment framework**, leveraging national and municipal co-financing	Mix of **public investment, EU funds, and private-sector collaboration**	**Climate budgeting integrated into municipal planning**, requiring national and EU financial support
Stakeholder Engagement	**Public-private partnerships**, urban resilience forums, community engagement in climate strategy	**Citizen-driven climate initiatives**, strong business and research partnerships	**Highly participatory governance**, climate councils, engagement through **Lahti Environmental Watch**
Smart City & Data Use	**Real-time climate monitoring**, integration with **urban digitalization**initiatives	**AI-driven sustainability tracking**, integration of climate data with municipal planning	**Comprehensive emissions monitoring**, systematic integration of climate targets into governance

Transport Electrification	Expansion of **low-emission mobility**, electric public transport, pedestrian-friendly planning	**Electrification of public and private transport**, strong focus on **cycling infrastructure and car-free zones**	**Road transport electrification**, modal shift incentives, integration with circular economy strategies
Building Decarbonization	**Energy retrofits**, smart grid expansion, district heating transition	**Energy-efficient buildings**, net-zero public structures, district heating optimization	**Extensive energy-efficient retrofits**, sustainable material use, **carbon capture and district heating innovations**

Key Takeaways

- **Thessaloniki** prioritizes **resilience and national policy integration**, leveraging **EU funds for systemic energy and transport transformations**.
- **Klagenfurt** is advancing **regional sustainability**, focusing on **energy autonomy, urban planning, and electrification**.
- **Lahti** is the most ambitious, already nearing **climate neutrality in municipal operations**, with a strong **climate budgeting** and **monitoring framework**.

Political Trust Climate

Political Trust and Climate Governance in German Cities: Comparative Insights from Mannheim, Münster, Aachen, and Heidelberg

Geographical and Economic Realities

Germany has long been a leader in sustainability and climate policy, but the real test of its ambition lies in the implementation of Climate City Contracts (CCCs)at the municipal level. Cities like Mannheim, Münster, Aachen, and Heidelbergare at the forefront of this effort, each

navigating distinct economic and governance challenges in their pursuit of climate neutrality. Yet beyond technical and financial considerations, one critical factor determines their success: political trust.

Mannheim, an industrial powerhouse in southwestern Germany, bears the burden of high emissions due to its strong manufacturing sector, particularly in automotive and chemical industries. While it has the economic capacity to finance large-scale decarbonization projects, its reliance on heavy industry makes the transition to net zero particularly complex.
Münster, in contrast, is a university town with a service-based economy and a reputation as Germany's most bicycle-friendly city. It does not struggle with industrial emissions, but its climate policies must address urban transport, energy efficiency, and public engagement to reach its ambitious targets.

Aachen, located near the borders of Belgium and the Netherlands, is a hub for technological innovation and research, with RWTH Aachen University at its core. The city has the potential to lead in climate technology, but it faces the challenge of translating academic research into practical, scalable solutions.

Heidelberg, with its historic architecture and a strong emphasis on education and research, prioritizes energy-efficient buildings and renewable district heating. However, its goal of full climate neutrality by 2040 lags behind the more ambitious 2030 targets set by other cities, raising concerns about whether a slower approach might erode political trust.

Climate Strategies: A Tale of Four Cities

Each city has crafted ambitious plans to meet Germany's climate goals, with different focal points reflecting their economic and geographic contexts:

- Mannheim prioritizes industrial decarbonization, urban transport electrification, and sustainable infrastructure, seeking to reconcile economic strength with emissions reductions.
- Münster, targeting a 95% CO_2 reduction by 2030, places a strong emphasis on citizen participation and expanding its already impressive cycling infrastructure.
- Aachen integrates public and private investments, striving to balance technological advancement with practical implementation.

- Heidelberg leads in building retrofits and urban greening strategies, serving as a model for historic cities seeking to modernize sustainably.

While each Climate City Contract outlines detailed pathways for emissions reduction and financial investment, a larger challenge looms—ensuring that climate policies are not only implemented but also trusted by the public.

Political Trust and Climate Governance in German Cities: Comparative Insights from Mannheim, Münster, Aachen, and Heidelberg

Germany has long been a leader in sustainability and climate policy, but the real test of its ambition lies in the implementation of Climate City Contracts (CCCs) at the municipal level. Cities like Mannheim, Münster, Aachen, and Heidelberg are at the forefront of this effort, each navigating distinct economic and governance challenges in their pursuit of climate neutrality. Beyond technical and financial considerations, one critical factor determines their success: political trust.

The geographical and economic setting of a city shapes its emissions profile, climate vulnerabilities, and transition strategy. Coastal cities may face rising sea levels, while inland industrial hubs contend with air pollution and high-carbon industries. Mannheim, a major manufacturing and logistics hub, must reconcile its economic reliance on heavy industry with ambitious decarbonization goals. Münster, known for its service-based economy and cycling infrastructure, focuses on urban mobility and energy efficiency rather than industrial emissions. Aachen, home to RWTH Aachen University, positions itself as a climate innovation hub, leveraging research institutions for sustainable transformation. Meanwhile, Heidelberg, while a historic and research-oriented city, faces regulatory hurdles in retrofitting its architectural heritage to meet modern energy standards.

While all cities in the initiative commit to climate neutrality, their strategies differ in scope and ambition. Mannheim's strategy revolves around decarbonizing its transport network, enhancing energy efficiency, and integrating nature-based solutions. Münster excels in participatory climate action, embedding public engagement into urban mobility and energy transition policies. Aachen, due to its geographical location near the Rhenish mining district, focuses on post-coal transition strategies, aiming to mitigate economic shocks while embracing

green energy. These diverse approaches underscore the importance of tailoring climate policies to local needs rather than applying one-size-fits-all solutions.

Effective governance structures ensure that climate action is not sidelined by competing political and economic pressures. Strong leadership, interdepartmental coordination, and stakeholder integration are vital. Some cities adopt centralized governance models, such as Heidelberg, which institutionalized climate leadership through dedicated municipal agencies, ensuring that sustainability goals permeate all urban policies. Others, like Münster, embed climate governance in multi-stakeholder networks, where decision-making is shared across municipal, business, and civic actors. Aachen actively partners with its university and industry to integrate technological solutions into climate action. Governance, however, is not just about structure; it is about execution. The best models integrate climate action into all municipal activities, ensuring long-term coherence and accountability.

No climate transition will succeed without public support. Cities with high political trust and engaged communities are more likely to implement ambitious climate policies with fewer obstacles. Münster institutionalizes climate democracy, involving citizens in planning processes, funding allocation, and behavioral change campaigns. Mannheim deploys a Citizens' Council on climate protection, ensuring direct public input into municipal climate strategies. Heidelberg operates a participatory budgeting model, where citizens can influence climate investment priorities. However, other cities struggle with engagement. Aachen, while integrating civil society initiatives, acknowledges that broader behavioral change is needed to achieve emissions reductions. The key takeaway is that cities that involve residents in climate decision-making not only foster trust but also accelerate policy adoption.

A systematic evaluation of strengths and weaknesses helps cities learn from each other. Münster excels in community-driven climate action, but its approach may be difficult to replicate in more industrialized cities. Mannheim leads in industrial decarbonization, yet struggles with public trust and participation. Aachen’s innovation ecosystem is strong, but implementation gaps in governance coordination pose a challenge. Heidelberg’s climate leadership is well-established, yet its slower transition timeline raises concerns about maintaining momentum. The key question for policymakers is how cities can leverage their strengths while addressing their weaknesses. The answer lies in cross-learning and adaptation.

Cities do not operate in a vacuum. Their climate ambitions must align with national climate policies, EU funding and regulatory frameworks, and geopolitical and economic uncertainties. For example, Aachen's climate plans are intertwined with Germany's post-coal transition strategy, affecting regional funding and investment priorities. Mannheim must align its industrial transformation with federal and EU regulations, ensuring that decarbonization efforts remain financially viable. Additionally, external disruptions—such as energy shortages or political shifts—can derail municipal climate plans. A resilient CCC should not only focus on achieving net zero but also prepare for economic and political volatility.

By systematically applying these insights, we gain a clearer picture of how cities are navigating the complex path to climate neutrality. The most effective CCCs align economic realities with climate goals, integrate governance across municipal departments, secure public trust through participatory decision-making, balance mitigation with adaptation strategies, and remain flexible in the face of political and economic uncertainties. Germany's climate-leading cities each bring valuable lessons to the table. Their experiences highlight that while the paths to climate neutrality vary, the underlying principles remain constant: ambitious policy, strong governance, citizen engagement, and financial commitment. By learning from each other, European cities can transform climate ambitions into concrete, lasting change.

Comparative Table: Climate Governance in German Cities

Category	Mannheim	Münster	Aachen	Heidelberg
Economic Profile	Industrial hub with strong manufacturing sector (automotive, chemicals)	University town, service-based economy, cycling infrastructure	Technology and research hub, strong university presence	Historic city, education and research-driven economy
Climate Targets	Climate neutrality by 2030	95% CO_2 reduction by 2030	Climate neutrality by 2030	Climate neutrality by 2040
Key Sustainability Initiatives	Decarbonization of transport, energy efficiency, nature-based solutions	Urban mobility, participatory climate action, renewable energy integration	Post-coal transition, energy innovation, smart mobility	Energy-efficient buildings, district heating, urban greening

Governance Structure	Centralized governance, municipal leadership in climate policy	Decentralized, multi-stakeholder governance	Public-private partnerships, academic collaboration	Institutionalized climate leadership, strong municipal role
Citizen Participation	Citizens' Council on climate protection, but struggles with broader trust	High public trust, extensive participatory governance, citizen engagement	Limited direct public engagement, relies on research institutions	Participatory budgeting, but transition timeline raises concerns
Funding & Investment	EU and national funding, industrial investment	Public and municipal investment, sustainability grants	EU and private-sector funding, innovation grants	Public-private partnerships, regional climate funding
Strengths	Industrial decarbonization leadership, financial capacity	Strong public participation, cycling infrastructure leadership	Research-driven climate innovation, industrial collaboration	Well-established climate leadership, long-term policy vision
Challenges	Public skepticism, industrial transition complexity	Scaling participatory governance to other policy areas	Bridging innovation and real-world implementation, governance coordination	Slower transition compared to other cities, potential loss of momentum

Eastern European Cities: Climate Commitments and the Challenge of Green Transitions

Eastern Europe is undergoing a profound transformation in its approach to sustainability and climate policy. As the region moves away from its historical reliance on fossil fuels and

heavy industry, cities like Cluj-Napoca, District 2 Bucharest, Suceava, Sofia, Miskolc, and Pecs are at the forefront of these efforts. Each faces unique economic and political challenges, yet all are tasked with implementing ambitious Climate City Contracts (CCCs). Beyond the technical and economic considerations, one crucial factor determines their success: the ability to build a sustainable transition that is both **financially feasible** and **socially accepted** by the public.

Geographical and Economic Realities

Cluj-Napoca, Romania's **IT and innovation hub**, enjoys a growing digital economy with relatively low industrial emissions. However, rapid urbanization has led to **air pollution and increasing energy demand**, forcing the city to rethink its infrastructure and mobility strategies. Meanwhile, **District 2 of Bucharest**, as part of the country's capital, faces an **intense urban heat island effect, high traffic congestion, and poor air quality**, requiring comprehensive electrification of public transport and large-scale building retrofits.

Suceava, in northern Romania, is emerging as a **leader in electrified public transport**, boasting one of the country's most advanced electric bus networks. Yet, its rural and post-industrial surroundings make it vulnerable to **seasonal flooding and economic disparities** that hinder green investments. Further south, **Sofia, Bulgaria's capital**, struggles with severe **winter air pollution due to coal-based residential heating** but has begun large-scale green space expansion and urban cooling initiatives to counteract extreme climate effects.

Miskolc, once a **major steel industry hub in Hungary**, has had to navigate **post-industrial economic decline** while transitioning towards green solutions. The city's challenge lies in decarbonizing its heating sector and fostering sustainable urban renewal. Similarly, **Pecs, historically a coal-mining city**, has shifted towards culture and tourism, yet it must now integrate **sustainability into its heritage preservation efforts** while addressing vulnerabilities to heatwaves and water shortages.

The Climate Strategies: A Tale of Six Cities

Each of these cities has developed a strategy tailored to its economic profile and environmental constraints. **Cluj-Napoca and District 2 Bucharest** have secured strong financial backing through **EU and national recovery funds**, allowing for investments in **digital sustainability solutions, green mobility, and circular economy models**. In contrast, **Suceava**

has prioritized e-mobility, aiming for **full electrification of public transport** while investing in decentralized renewable energy projects.

Sofia's transition is hampered by its **continued dependence on coal heating**, but its climate strategy includes extensive **air pollution reduction measures and public transport electrification**. Miskolc and Pecs focus on **building renovation and district heating decarbonization**, with a growing emphasis on geothermal energy and industrial transformation. However, both cities still struggle with **securing adequate financial resources for deep renovations** and face **local resistance to energy price reforms**.

Despite these strategic differences, a common challenge looms over all six cities: ensuring that their climate policies are not only implemented but also trusted and supported by their citizens.

The Challenge of Green Transitions: Overcoming Public Resistance

Eastern Europe's climate transformation is shaped not only by technological and financial constraints but also by the **social and political context** in which these policies unfold. Public trust in government institutions varies widely, affecting the pace and effectiveness of climate action. **Suceava enjoys strong local support** due to its tangible improvements in urban mobility, whereas **Sofia faces skepticism** over the feasibility of its heating sector transition.

Miskolc and Pecs, both navigating post-industrial economic shifts, must convince citizens that green policies will bring **economic benefits rather than job losses**. Cluj-Napoca and District 2 Bucharest, while benefiting from **high levels of EU investment**, must ensure that climate initiatives are **equally distributed across socio-economic groups**, preventing inequalities from worsening.

Lessons in Collaboration: What These Cities Can Learn From One Another

1. **Sofia should adopt Suceava's public engagement model**, which integrates citizen input into green mobility and energy decisions.
2. **Miskolc can benefit from Pecs' approach to cultural heritage sustainability**, incorporating energy efficiency into historical building preservation.
3. **District 2 Bucharest and Cluj-Napoca should expand Suceava's electrification strategies**, using its model to accelerate transport decarbonization.

4. **Suceava and Pecs can learn from Cluj-Napoca's digital governance tools**, ensuring transparent emissions tracking and public access to sustainability data.

Navigating the Road Ahead

Eastern Europe's climate success depends on more than just ambitious targets and financial investment—it requires a **well-managed transition that is equitable, politically viable, and publicly trusted**. Without trust, the most well-intentioned policies will struggle to gain traction. The cities that successfully integrate **public participation, demonstrate tangible progress, and maintain open dialogue** will not only accelerate their green transitions but also serve as models for urban sustainability across Europe.

Comparative Analysis: Cities with Strong Citizen Participation & Local Climate Governance

The cities of **Ljubljana (Slovenia), Espoo (Finland), and Trikala (Greece)** exemplify governance models that integrate high levels of citizen participation and localized climate governance. While their economic structures, climate challenges, and governance mechanisms vary, they share a commitment to inclusive decision-making, ambitious climate neutrality goals, and extensive public engagement mechanisms. This analysis compares their approaches using a structured framework.

Each city's geographical setting and economic profile influence both their emissions and their strategies for achieving climate neutrality. **Ljubljana**, as Slovenia's capital, balances historical preservation with urban modernization. Recognized as the **European Green Capital 2016**, it prioritizes emissions reduction via sustainable transport, energy-efficient buildings, and nature-based solutions. **Espoo**, Finland's second-largest city, plays a pivotal role in the country's transition to climate neutrality by 2035. It benefits from a strong knowledge economy and innovation ecosystem, integrating research and business collaborations into its climate strategies. **Trikala**, a Greek municipality with a reputation as the country's first "smart city," integrates climate actions with its digital innovation framework. While not an economic powerhouse, its use of European funding and smart urban planning strategies positions it as a climate leader.

All three cities aim for **climate neutrality by 2030**, aligning with the EU's **100 Climate Neutral and Smart Cities Mission**. **Ljubljana** emphasizes urban greening, sustainable mobility (cycling and pedestrian infrastructure), and community-driven biodiversity projects. **Espoo** places strong emphasis on **public-private partnerships**, using the city as a living lab for scalable climate solutions that could be exported globally. **Trikala** innovates with **smart city infrastructure**, including energy-efficient buildings, digital monitoring, and **circular economy solutions**. These cities rely heavily on **EU funding, private investment, and municipal budgeting**. **Espoo** integrates its climate budget into its annual city budget, ensuring accountability and financial transparency. **Trikala**, through the **Recovery and Resilience Facility (RRF)**, secures €6.9M for smart city solutions, including energy efficiency projects.

Ljubljana, Espoo, and Trikala integrate **national and EU frameworks** into their city policies, ensuring policy continuity and funding alignment. Ljubljana's **Participatory Communication Strategy** includes extensive stakeholder engagement across businesses, academia, and civil society. Espoo has a dedicated **Sustainable Espoo Programme**, fostering collaborations between residents, businesses, and policymakers. Trikala has formed a **climate action team** overseeing the **Climate City Contract (CCC)**, ensuring ongoing implementation and adaptation. Climate planning is embedded into city governance through **Ljubljana's** Sustainable Urban Mobility Plan (SUMP) and circular economy initiatives and **Espoo'sclimate budget and investment plans** integrated into long-term municipal planning.

These cities exemplify **inclusive governance**. **Ljubljana** hosts **participatory planning workshops**, community-led **urban greening programs**, and **digital platforms** for ongoing citizen engagement. **Espoo** moves from **consultation to partnership**, granting citizens a more active role as **co-creators** in climate policy. **Trikala** develops **incentive-based engagement models**, such as the **Tricoin digital currency**, rewarding citizens for sustainable behavior.

City	Strengths	Weaknesses
Ljubljana	Strong integration of **citizen participation** in policy formulation, ambitious urban greening efforts	Needs more focus on energy decarbonization beyond transport

Espoo	**Innovative governance**, strong research-industry collaboration, **climate budgeting**	Relatively slow adoption of decentralized energy solutions
Trikala	Leader in **smart city solutions**, digital monitoring of emissions, **incentive-based citizen engagement**	Relatively small economic base, requiring external funding

Espoo's Climate Budgeting Model could serve as a template for other cities, ensuring transparency and accountability in climate-related financial planning. **Trikala's Smart Governance & Incentives**, particularly the **Tricoin system**, provides an innovative model for engaging citizens through digital incentives. **Ljubljana's Participatory Urban Planning**, including its **workshops and urban greening initiatives**, demonstrates how cities can foster collective responsibility in climate action.

The cities of **Ljubljana, Espoo, and Trikala** showcase different yet complementary approaches to climate governance. They emphasize participatory planning, **local climate governance**, and **multi-level integration** with national and EU frameworks. The success of their initiatives will depend not only on financial investments and technical measures but also on maintaining **political trust** through continued citizen engagement and transparent governance. This comparative analysis highlights that while these cities already lead in local climate action, further integration of **climate budgeting, digital incentives, and ecosystem-based governance** could enhance their effectiveness. By learning from each other's strengths and addressing common challenges, these cities can refine their climate strategies and serve as models for other municipalities striving for **climate neutrality by 2030**.

Comparative Analysis: Cities Advancing Climate Innovation and Resilience

The cities of Gothenburg (Sweden), Umeå (Sweden), Izmir (Turkey), Valencia (Spain), and Turku (Finland) demonstrate distinct approaches to urban climate policy, combining industrial transformation, technological innovation, and participatory governance. While their

geographical and economic contexts differ, they share a commitment to achieving climate neutrality, leveraging multi-stakeholder collaboration, and embedding sustainability in urban planning.

Each city's geographical and economic profile shapes its emissions and climate strategy. Gothenburg, Sweden's largest port city and a key industrial hub, faces high emissions from logistics and manufacturing but possesses strong economic resources for decarbonization. Umeå, in northern Sweden, is a growing university city that prioritizes renewable energy, district heating, and sustainable transport, though its reliance on fossil-fuel-based transport remains a challenge. Izmir, Turkey's third-largest city, is an industrial and trade hub with high urbanization rates, making energy efficiency and emissions reduction critical. Valencia, a Spanish coastal city, integrates climate policy with economic growth, balancing tourism, biodiversity preservation, and mobility strategies. Turku, a Finnish pioneer in climate governance, aims for carbon neutrality by 2029, implementing one of Europe's most comprehensive emission-reduction strategies.

All five cities have committed to ambitious climate targets, aligning with the EU's 100 Climate Neutral and Smart Cities Mission. Gothenburg prioritizes industrial decarbonization, sustainable mobility, and carbon capture. Umeåfocuses on fossil-free transport, circular economy expansion, and enhanced collaboration across sectors. Izmir integrates governance and climate action through Global Climate Community (GCC) Izmir, emphasizing renewable energy and resilience. Valencia merges the European Green Deal framework with civic engagement and investment in green infrastructure. Turku leads in emissions reduction, embedding climate objectives into municipal budgeting and circular economy planning.

Governance plays a key role in the success of each city's climate plan. Gothenburg employs a strong municipal governance model with deep ties to research and industry. Umeå works closely with academia and EU initiatives such as Viable Cities to drive climate action. Izmir's GCC model ensures broad stakeholder participation, while Valenciaintegrates systemic innovation and participatory governance. Turku applies a cross-sectoral approach, ensuring community involvement and accountability in climate planning.

Public engagement varies in scale and focus across these cities. Gothenburg supports community-driven sustainability projects but faces challenges in gaining trust for industrial

decarbonization policies. Umeå fosters collective responsibility through collaborative climate planning. Izmir integrates inclusivity via GCC Izmir, engaging diverse stakeholders. Valencia champions participatory decision-making, ensuring citizens have a voice in climate action. Turku employs transparent communication and participatory climate budgeting to maintain public engagement.

City	Strengths	Weaknesses
Gothenburg	Strong industrial transformation strategies, well-funded decarbonization projects	Balancing economic reliance on heavy industry with climate goals
Umeå	Strong institutional cooperation, renewable energy leadership	Challenges in transitioning private and freight transport away from fossil fuels
Izmir	Inclusive governance model, broad stakeholder engagement	Need to accelerate renewable energy adoption and emissions reduction efforts
Valencia	Systemic innovation, extensive citizen engagement	Financial sustainability of large-scale projects
Turku	Leading in emissions reduction, well-integrated climate policies	Maintaining momentum post-2029 toward a climate-positive future

Each city offers valuable insights for climate governance. Turku's climate budgeting model could serve as a model for embedding climate policy in municipal financial planning. Gothenburg's industrial transformation strategies provide a roadmap for cities with high-emission sectors. Izmir's GCC framework fosters inclusive governance, while Valencia's participatory approach ensures broad public involvement. Umeå's emphasis on research and innovation offers lessons in knowledge-driven sustainability.

The cities of Gothenburg, Umeå, Izmir, Valencia, and Turku demonstrate different but complementary strategies for achieving climate neutrality. Their success will depend on integrating financial investment, governance innovation, and public trust to ensure long-term sustainability. By sharing best practices and addressing common challenges, these cities can

strengthen their climate resilience and set benchmarks for urban climate governance across Europe and beyond.

CONCLUSION

This report has explored the intricate relationship between political trust and the governance of climate neutrality, focusing on the European Green Deal (EGD) and the 100 Climate-Neutral and Smart Cities initiative. As climate action increasingly demands cooperation between governments, businesses, and civil society, the success of these ambitious sustainability projects hinges on fostering trust in political institutions, scientific expertise, and multi-level governance frameworks. Our findings underscore the idea that political trust is not a static condition but a dynamic process shaped by transparency, inclusivity, and the perceived legitimacy of decision-making processes.

CONCLUSIONS

1. **Trust as a Determinant of Policy Success**

One of the most significant takeaways from this study is that trust in governance is as crucial as technical and financial capacities when implementing climate policies. The European Green Deal provides a transformative vision for sustainability, yet its execution depends on citizens' and stakeholders' belief in the fairness, feasibility, and long-term benefits of the proposed transitions. Public skepticism, if left unaddressed, can slow or even derail climate initiatives, as seen in past resistance to carbon taxes and other sustainability regulations.

2. **The Role of Governance Structures**

The comparative analysis of cities reveals that governance models play a pivotal role in shaping political trust. Cities with well-institutionalized participatory mechanisms—such as Milan, Barcelona, and Lahti—demonstrate a stronger ability to build long-term support for sustainability initiatives. These cities integrate stakeholder input through citizen assemblies, climate budgeting, and digital transparency tools, ensuring that climate policies align with public concerns and priorities. Conversely, cities where decision-making is centralized or lacks inclusive engagement strategies, such as Thessaloniki or Mannheim, often struggle with policy acceptance and political pushback.

3. **Economic Disparities and Uneven Climate Governance**

The analysis highlights a critical imbalance in the distribution of resources and governance capacities across European cities. Wealthier urban centers, particularly in Northern and Western Europe, have greater financial and institutional capacity to implement decarbonization policies. Cities such as Stockholm, Munich, and Helsinki benefit from extensive green infrastructure, stable public funding, and a history of strong environmental governance. On the other hand, cities in economically struggling regions—especially in Southern and Eastern Europe—face structural barriers such as limited municipal budgets, high dependence on carbon-intensive industries, and social resistance to costly green transitions. This discrepancy raises concerns about whether climate neutrality efforts will deepen existing regional inequalities, eroding trust in the broader EU sustainability agenda.

4. **Citizen Engagement and Legitimacy**

The role of public participation in climate governance is a recurring theme throughout the report. The most successful climate initiatives are those that prioritize citizen involvement, ensuring that policies are co-designed rather than imposed. Cities like Leuven and Bologna, which integrate direct democratic mechanisms such as participatory budgeting and climate pacts, demonstrate higher levels of public trust and compliance with sustainability policies. In contrast, cities where climate decisions are largely shaped by top-down governance approaches may encounter resistance, as seen in past controversies over low-emission zones and energy pricing policies.

5. **The Challenge of Enforcement and Accountability**

While many cities have pledged ambitious emissions reductions through Climate City Contracts (CCCs), a key challenge remains in ensuring that these commitments translate into concrete action. The voluntary nature of CCCs means that their effectiveness depends on sustained political commitment and the ability of local governments to implement legally binding climate policies. Some cities, such as Amsterdam and Copenhagen, have successfully embedded climate action into broader regulatory frameworks, making sustainability targets enforceable. However, other cities—particularly those with less robust institutional capacities—risk falling short of their climate neutrality goals without stronger accountability measures.

6. **The Language of Trust in Climate Communication**

Another crucial finding is the role of communication in shaping public trust in climate policies. The European Union's 100 Cities Mission has adopted a strategic approach to rhetoric, emphasizing collaboration, co-ownership, and shared responsibility. By framing climate action as a collective effort rather than a top-down mandate, these policies seek to enhance political trust and mitigate resistance. However, discrepancies between rhetoric and real-world implementation can undermine credibility. If local governments fail to provide adequate financial and technical support, or if citizens perceive sustainability initiatives as disproportionately benefiting certain social groups, trust in climate governance may erode over time.

7. **Balancing Climate Ambition with Social Justice**

A recurring issue throughout the analysis is the need to balance ambitious climate goals with social and economic realities. The transition to climate neutrality requires substantial investments in green infrastructure, clean energy, and sustainable transport, but these transformations must be designed with fairness and inclusivity in mind. The case of Milan demonstrates how targeted financial mechanisms and public-private partnerships can help mitigate economic disparities in climate policy implementation. Conversely, the experience of past sustainability protests—such as the Yellow Vest movement in France—illustrates the risks of failing to address social equity concerns in climate transitions.

Implications for the Future of Climate Governance

The findings of this report highlight several implications for policymakers, city planners, and sustainability advocates working to implement the European Green Deal and the 100 Climate-Neutral Cities initiative:

• **Institutionalizing Participatory Climate Governance**

To sustain political trust, cities must institutionalize citizen engagement mechanisms that go beyond symbolic consultation. Establishing permanent citizens' climate assemblies, participatory budgetary processes, and community-driven energy initiatives can help ensure that sustainability policies are perceived as legitimate and inclusive.

• **Bridging the Gap Between Wealthy and Economically Struggling Cities**

The European Union must prioritize equitable resource distribution, ensuring that cities with weaker financial and administrative capacities receive sufficient support to meet climate goals. Expanding investment in just transition mechanisms, targeted financial incentives, and capacity-building programs for underfunded municipalities will be crucial in maintaining trust across diverse regional contexts.

• **Strengthening Legal and Financial Accountability**

While voluntary commitments such as Climate City Contracts provide a flexible framework for sustainability policies, long-term enforcement mechanisms will be necessary to translate climate pledges into action. Policymakers should explore stronger regulatory frameworks, enhanced oversight mechanisms, and legally binding emissions targets to reinforce the credibility of climate neutrality commitments.

• **Ensuring Transparent and Inclusive Climate Communication**

Effective communication strategies should emphasize transparency, inclusivity, and responsiveness to public concerns. Governments must proactively address misinformation about climate policies, provide accessible information on sustainability initiatives, and highlight the tangible benefits of climate action for citizens.

• **Integrating Climate Justice into Policy Frameworks**

Achieving public trust in sustainability policies requires integrating climate justice principles into urban planning and governance. Ensuring that marginalized communities, low-income households, and vulnerable workers are included in green transitions will be vital for securing broad-based public support and avoiding social backlash.

The European Green Deal and the 100 Climate-Neutral and Smart Cities initiative represent some of the most ambitious sustainability projects ever undertaken at the transnational level. However, their success will depend not only on technological advancements and financial investments but also on the ability to build and sustain political trust. The findings of this report emphasize that trust is cultivated through transparency, participatory governance, equitable policy design, and effective accountability mechanisms. Cities that embed these principles into their climate governance structures will not only be more successful in reaching their climate neutrality goals but also serve as global models for sustainable urban transformation.

As the climate crisis accelerates, the need for trusted, resilient, and adaptive governance structures becomes increasingly urgent. By fostering genuine political trust and ensuring

inclusive, well-communicated climate action, European cities can not only meet their sustainability targets but also reinforce the broader democratic legitimacy of climate governance in the years to come.