

State of our cities

Participatory climate action in low-income urban settlements: evidence from cities in Mexico, Brazil and Argentina

Anna Walnycki, Tucker Landesman, Jorgelina Hardoy, Florencia Almansi, Mariana Campos Sánchez, Ana Iris Enríquez, Andrea Villasís Escobedo, Ariadne Samios, Camila Alberti, Henrique Evers, Isadora Freire, Larissa Oliveira, Laura Azeredo, Millena Oliveira, Paula Tavares and Paula Santos

Issue Paper
November 2026

Urban; Climate change

Keywords:
Climate change adaptation, climate justice, climate resilience, housing, informal settlements (slums)

iied
IIED-AL Instituto Internacional de Medio Ambiente y Desarrollo IIED - América Latina
IDOS German Institute of Development and Sustainability
UNU EHS

About the authors

Anna Walnycki is cities lead at IIED.

Tucker Landesman is a senior researcher at IIED.

Jorgelina Hardoy is a researcher and coordinator at IIED-América Latina.

Florencia Almansi is a researcher at IIED-América Latina.

Mariana Campos Sánchez is an urban development manager at WRI México.

Ana Iris Enríquez is an urban development senior coordinator at WRI México.

Andrea Villasís Escobedo is an urban development junior coordinator at WRI México.

Ariadne Samios is an active mobility coordinator at WRI Brasil.

Camila Alberti is a senior urban development analyst at WRI Brasil.

Henrique Evers is an urban development manager at WRI Brasil.

Isadora Freire is a senior urban development analyst at WRI Brasil.

Larissa Oliveira is an active mobility analyst at WRI Brasil.

Laura Azeredo is an urban development coordinator at WRI Brasil.

Millena Oliveira is an urban development analyst at WRI Brasil.

Paula Tavares is an active mobility analyst at WRI Brasil.

Paula Santos is an urban mobility manager at WRI Brasil.

Corresponding author: Anna Walnycki, anna.walnycki@iied.org

Acknowledgements

This publication forms part of the Transformative Urban Coalitions (TUC) project, funded by Germany's Federal Ministry of Economic Affairs and Climate Action. We would like to thank the authors and reviewers for their valuable comments and feedback on earlier drafts of this publication, as well as Lucy Southwood for editing and Jodie Frosdick for production support. We would especially like to thank the participants of each urban lab for their engagement throughout this project, inviting us into their communities and giving their time to inform this research.

Cover photo: Barrio 20, Buenos Aires. Credit: IIED-AL

Published by IIED, November 2026

Walnycki, A, Landesman, T, Hardoy, J, Almansi, F, Campos Sánchez, M, Iris Enríquez, A, Villasís Escobedo, A, Samios, A, Alberti, C, Evers, H, Freire, I, Oliveira, L, Azeredo, L, Oliveira, M, Tavares, P and Santos, P (2026) State of our cities. Participatory climate action in low-income urban settlements: evidence from cities in Mexico, Brazil and Argentina. IIED, London.

iied.org/22783iied

ISBN: 978-1-83759-245-6

This publication has been reviewed according to IIED's peer review policy, which sets out a rigorous, documented and accountable process. The independent reviewers have asked to remain anonymous. For further information, see www.iied.org/research-excellence-impact

International Institute for Environment and Development
44 Southampton Buildings, London WC2A 1AP, UK
Tel: +44 (0)20 3463 7399
www.iied.org

www.linkedin.com/company/iied
www.facebook.com/theIIED

Download more publications at iied.org/publications

IIED is a charity registered in England, Charity No.800066 and in Scotland, OSCR Reg No.SC039864 and a company limited by guarantee registered in England No.2188452.

IIED publications may be shared and republished in accordance with the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International Public License (CC BY-NC-ND 4.0). Under the terms of this licence, anyone can copy, distribute and display the material, providing that they credit the original source and don't use it for commercial purposes or make derivatives. Different licences may apply to some illustrative elements, in which instance the licence will be displayed alongside. IIED is happy to discuss any aspect of further usage. Get more information via www.iied.org/about-publications

Low-income communities, who are most exposed to climate risk and have the lowest carbon footprints, are routinely excluded from processes meant to address climate challenges. Drawing on five urban labs in Argentina, Brazil and Mexico, this paper shows that **low-income settlements are not only sites of vulnerability but also essential sites of climate action**.

Through co-production, quick-win pilots and nature-based solutions, the labs shaped master plans, a national upgrading programme and a ministry-run heat monitoring. The lesson: **urban climate action often hits governance problems before hitting technical problems**.

To resolve this, the institutions, funders and policymakers working on urban climate action must ensure the legitimacy of low-income and vulnerable settlements before trying to to scale climate action projects; and where basic needs go unmet, delivering mitigation initiatives alongside adaptation measures can support transformative climate action.

Contents

Abbreviations 4

Summary 5

1 Introduction 7

2 Platforms for learning and exchange 9

3 Overview from the cities 12

Common challenges 13
Responses 13
Scaling in diverse contexts 15
Future agendas 16

4 City case studies 17

Mexico 18
Brazil 19
Argentina 22

5 Reflections on convergence and divergence 25

6 Concluding remarks 29

Connecting mitigation and adaptation in the context of settlement upgrading – a future agenda 30

7 Looking forward 31

Abbreviations

IVC	*Instituto de Vivienda de la Ciudad*, the housing institute of the city of Buenos Aires
MGP	*Mesa de gestión participativa* (participatory management committee)
NbS	Nature-based solutions
TUC	Transformative Urban Coalitions
UTCI	Universal Thermal Climate Index
WRI	World Resources Institute

Summary

Urban climate action is at a crossroads. Carbon accounting, green infrastructure investment and climate risk modelling have produced real knowledge, but they treat cities as administrative units and technical problems, not as landscapes of inequality. The communities that bear the greatest climate burden are routinely excluded from the planning meant to address the challenges they face. That exclusion is structural. While it continues, the gap between climate ambition and reality will remain.

This paper offers a different starting point, based on practice rather than theory. Between 2021 and 2026, the Transformative Urban Coalitions (TUC) programme set up multisectoral urban labs in five Latin American cities: Buenos Aires (Argentina), Recife and Teresina (Brazil), and Naucalpan and León (Mexico). The labs brought residents together with civil society, academia, government and the private sector, not in consultation, but in co-production through the Community of Transformation. This community also linked the five labs, supporting peer exchange across countries, which participants valued as a rare source of pride and inspiration.

The innovation of this work is what came out of it. The labs did not set out with a climate justice focus; their brief was to reduce urban carbon emissions. But as these low-income settlements contribute little to emissions and face flooding, extreme heat and unmet basic needs, every lab renegotiated that brief. The result is a body of evidence, written by the people who facilitated the labs. It shows that marginalised communities are not simply sites of climate vulnerability, but essential sites of climate action. It also sets out what participatory, climate-just transformation needs to scale and what holds it back.

Key findings

1. Climate action in these settlements often hits governance problems before it hits technical problems. The five labs were all shaped to a certain extent by fragmented institutions or low levels of collaboration and trust. Decades of unfulfilled top-down interventions and co-opted participation had left communities sceptical. In Mexico, pressing social challenges often took priority over climate change. In Brazil, planning was sometimes technocratic and siloed. In Argentina, the lab inherited legitimacy from an existing, legally backed upgrading process,[1] but lost ground when political restructuring dissolved key counterparts. The tools and knowledge already exist. What is missing is the institutional architecture to bring community knowledge into decision making.

2. Mitigation cannot be separated from adaptation. In Teresina, temperatures exceed 32°C for up to 340 days a year, and 90% of residents in Residencial Edgar Gayoso say their homes are unbearably hot. Recife faces coastal flooding. Villa 20 in Buenos Aires lives with dense, heat-absorbing streets and almost no tree canopy. In León, limited tree cover exacerbates summer heat approaching 40°C, while Naucalpan faces severe flooding. These communities cannot tackle mitigation first and adaptation later. The most effective interventions ignored this distinction and delivered cooling, stormwater management, carbon sequestration and improved public space together.

3. Climate action gains traction only when framed through local needs. Recife's *Artesãs do Pilar* linked recycling to women's income, while Teresina's *Quintais Verdes* combined cooling with food security, showing that climate and socioeconomic goals do not have to compete.

4. Visible quick wins are a precondition for, not an accelerant of, scale. Small, low-cost, co-designed pilots showed what was feasible, built trust and drew in new participants. Two became anchors for years of later work: Teresina's *Praça dos Sonhos*, the neighbourhood's first public space, built through community *mutirões* (collective work parties), and Recife's *Rota da Infância* child-friendly streets. Nature-based solutions (NbS) were the near-universal entry point, making climate action tangible and locally owned. In Buenos Aires, three years of microclimatic monitoring showed significant reductions in thermal stress during critical daytime hours.[2] In Naucalpan, an early shading pilot in *Parque Revolución* laid the groundwork for a broader public space transformation years later, now being planned by the local government using insights and climate adaptation criteria developed through the urban lab.

5. Inclusion requires practical changes and data can be a tool for rights. Moving from weekday and online meetings to in-person evening and weekend gatherings with childcare strengthened women's participation and leadership. Community-led censuses in Brazil turned statistical invisibility into negotiating power.

6. Scaling travels through methods, not blueprints. No lab scaled by copying physical designs. Instead, they transferred methods, capacities and trust-building approaches, and produced their own durable institutional artefact:

In Mexico, the labs scaled upward into binding instruments. León's Municipal Planning Institute is incorporating the León lab's participatory method for turning streams into linear parks into its Streamside Linear Parks Master Plan, which is under development. In Naucalpan, the municipality has adopted the lab's pilot as criteria for climate-adaptive public spaces, and these are now informing state guidelines.

In Brazil, they scaled outward. Lessons from both labs brought climate justice into the national *Periferia Viva* programme. The Recife lab codified its governance in a collective agreement, and the Teresina lab is pursuing independent legal status.

In Argentina, it scaled outward. Through intercity knowledge transfer and institutional uptake, the heat monitoring network gained recognition and support from the Buenos Aires city government, while NbS interventions developed through the urban lab were incorporated into public works tender specifications issued by the *Instituto de Vivienda de la Ciudad* (IVC). The experience also informed climate adaptation initiatives in Rosario, extending knowledge, methodologies and capacities beyond Villa 20.

7. Political volatility is a constant challenge. Elections, restructuring and budget cuts disrupted every lab. Climate and informal settlement upgrading have lost priority on many agendas, and rigid procurement frameworks limit scaling. The labs that lasted changed their structure. For example, in Buenos Aires, the lab changed from a territorial platform to a network node, expanding its centre of gravity without losing its local presence, producing, systematising and sharing methodologies and evidence that others can use, adapt or replicate, and exerting influence through these connections. But its work remains unfinished; its future depends on whether institutions, funders and policymakers are willing to build on it.

A future agenda

- **Treat participation as a precondition, not a procedural add-on.** Legitimacy must precede scale. Make multisectoral coalitions a formal part of local climate governance, with the time and resources that building trust demands.
- **Design across the mitigation/adaptation boundary.** In low-income settlements, the two are inseparable. Fund integrated neighbourhood transformation, not parallel workstreams.
- **Embed climate action in upgrading and housing policy.** Make NbS and climate criteria a formal requirement of reurbanisation and neighbourhood improvement programmes, with dedicated budgets and monitoring.
- **Recognise extreme heat as a priority urban risk in low-income areas,** with clear mandates, budgets and monitoring systems.
- **Fund experimentation.** Low-cost pilots let governments test social acceptance and feasibility before committing to permanent policy. Reform procurement so successful pilots can be scaled.
- **Scale governance, not blueprints.** Document processes as well as outcomes, and train civil servants so approaches live in people, not just in documents.
- **Back community-generated data** and participatory monitoring.
- **Design finance for informal contexts.** This includes blended finance, microcredit and targeted public funding windows.
- **Build for volatility,** creating support structures that can outlast electoral and funding cycles, such as collective agreements, academic hosts, legal entities and networks.
- **Work across silos,** recognising women and community leaders as key actors for fair climate action.

Introduction

1

Urban climate action is at a crossroads. The dominant frameworks, carbon accounting, green infrastructure investments and climate risk modelling have generated real knowledge; but they have largely been built around cities as administrative units and technical problems, not as landscapes of inequality.[3] The communities that bear the greatest climate burden are, more often than not, excluded from the planning processes designed to address it.[4] That exclusion is not incidental; it is structural. And as long as it persists, the gap between climate ambition and climate reality will remain.

This publication argues, from practice rather than theory, that closing that gap requires a different starting point. During the implementation of the Transformative Urban Coalitions (TUC) programme[5] in Buenos Aires (Argentina), Recife and Teresina (Brazil) and Naucalpan and León (Mexico), it became clear that marginalised, low-income communities are not simply sites of climate vulnerability; they are also essential sites of climate action. The urban labs established through TUC brought together residents with representatives of civil society, academia, governments and others, not just in consultation but in genuine co-production. And although the urban labs did not initially focus on climate justice, what emerged was a set of interventions that constitute a body of evidence about what participatory, climate-just urban transformation looks like on the ground, as well as its conditions, constraints and potential to scale.

Platforms for learning and exchange

2

This is a collaborative publication written by TUC team members who had active roles in facilitating and supporting the urban labs, as well as those who supported the Community of Transformation, a platform focused on exchanging knowledge and experiences across the project's geographies and work packages. When launched, the Community of Transformation enabled exchanges focused on creating and running the urban labs (Table 1). These included sessions that considered the composition of the labs, major challenges to establishing trust and developing a common vision, and the methods stakeholders were using to identify interventions with catalytic scaling potential.[6] As the work advanced and the labs began to ideate and experiment, urban lab members could start sharing their strategies, material successes and hurdles to overcome. The consortium could also begin to discuss the knowledge the project was generating via systematic research methods and practitioner- and community-driven experience.

We intentionally designed the Community of Transformation to be flexible and informal to encourage dialogue and focus on challenges and frustrations. Any project coalition member could call for, design and facilitate a learning exchange. Although most of these have taken place virtually, some happened in-person at semi-annual meetings and international conferences such as the United Nations Framework Convention on Climate Change annual conferences (COPs) and the International Community Based Adaptation Conference 2025.

As a project consortium, we were sometimes concerned about participation fatigue and that we were asking too much of urban lab participants, especially those who were volunteering their time. But we often saw the opposite. For most lab members, the opportunity to exchange with their peers in other countries is rare and a source of pride, curiosity and inspiration. If anything, we should have offered more exchanges and a permanent digital platform for real-time and asynchronous learning and communication,

Table 1. Overview of the urban labs approach

PROJECT PHASE AND OBJECTIVES	TOPICS AND PRIORITIES THAT SHAPED EXCHANGES
Launch Laying the foundations for collaborative climate action Building local coalitions and establishing urban labs	▪ Approaches to establishing urban labs in different urban sociopolitical contexts ▪ Participatory design and community visioning methods ▪ Identifying learning, exchange and capacity development priorities for urban lab stakeholders ▪ Community-led responses to climate change, examples and observed needs ▪ Coalition dynamics, challenges and trust building between diverse stakeholders.
Implementation Consolidation around local priorities, design and delivery of catalytic interventions	▪ Deep dives into each urban lab's progress, priorities and challenges ▪ Balancing/aligning socioeconomic development needs with climate action opportunities ▪ Designing interventions with a systems/catalytic approach ▪ Building momentum with quick wins and micro interventions ▪ The role of research in contributing to impact and local knowledge building ▪ Thematic exchanges (eg extreme heat, solid waste management).
Catalytic impact Scaling interventions and methods within urban governing systems	▪ Managing external challenges, national politics, budget cuts and stakeholder fallout ▪ National network building via in-country regional exchanges and site visits ▪ Challenges and opportunities for community ownership within the structure of an international climate project ▪ Communicating impact through narrative and storytelling.
Close Urban lab legacies and sustainability of coalitions for collaborative action	▪ Institutionalising or winding down urban labs ▪ Identifying opportunities for local coalitions beyond the scope and lifetime of the project ▪ Anxieties and unrealised objectives of urban labs and their stakeholders.

while recognising that virtual formats can be less accessible for some participants, including those with unstable internet access. Consortium members perceived that participation was most rewarding for members who were already active within the project, and participation fatigue was more likely among less engaged participants or for less relevant subjects. Given the chance to design the project again, we would have included more in-person exchanges. These were the most successful forms of exchange, particularly in terms of understanding key issues and building engagement with the project. But given limited budgets, challenging logistics across cities and countries, and broader efforts to create accessible and inclusive meetings, they could be difficult to organise.

Over the past two years, the Community of Transformation has supported the urban labs to focus on sustaining and scaling their efforts and impact beyond the project network. This has led to efforts to share reflections with broader networks of civil society actors focused on climate action for vulnerable urban settlements. An intercontinental exchange between TUC project stakeholders and members of Slum Dwellers International's Climate Champions Group[7] focused on how to replicate and scale up community-based pilot projects that address extreme heat in low-income, vulnerable settlements.[8]

As the project nears its close, each urban lab considers if and how to continue collaborating, with the Community of Transformation offering a space for discussing and comparing potential pathways. Strategies across the five cities differ, as our case studies show. Some labs are pursuing formal consolidation into legal entities that can receive and administer their own funds, while others are transitioning to university hosts, viewed as neutral brokers of knowledge and experimentation that can continue to convene activists and advocates in civil society with practitioners and local government policymakers. A third strategy deprioritises the urban lab as a formal administrative structure and focuses instead on sustaining the networked coalition that emerged through the pilot projects as a flexible, horizontal platform of community leaders, technical teams, civil society actors, researchers and public sector practitioners who have learned to work together and can continue advancing a climate action agenda in vulnerable and low-income urban communities when opportunities, resources and shared agreements allow. This advances a polycentric governance and horizontal scaling, operating fluidly between institutional formality and territorial informality.

Overview from the cities

3

Before beginning a more detailed discussion of how each city developed and implemented their urban labs, Table 2 outlines some of the core characteristics of the urban labs.

Common challenges

The urban labs sought to respond to several challenges that affected all five cities.[9]

Institutional fragmentation and challenging governance arrangements: this was a widespread issue, often manifested in siloed decision making, limited participatory mechanisms and technocratic traditions that exclude marginalised communities from urban and climate planning processes.

Limited trust and collaboration among stakeholders: decades of unfulfilled top-down interventions or co-opted participation have left many communities sceptical of participatory processes. In Mexico, pressing social challenges often took priority over climate change, while limited trust and collaboration presented challenges for the urban labs. Social organisations in Naucalpan were also fragmented, while in León, civil society was active but trust between stakeholders was limited.

Tension between the project and donor focus (reducing carbon emissions) and local priorities (the community's immediate unmet socioeconomic needs): many of the urban labs are in low-income communities that are underserved by basic infrastructure and disproportionately exposed to flooding, extreme heat and other climate risks that require adaptive responses, despite contributing little to emissions. So, while the project focus and donor priority was on developing mitigation interventions for cities, we found that mitigation was somewhat impossible without addressing adaptation in these contexts.

In practice, this meant that urban labs reframed climate action to respond to everyday pressing urban concerns by implicitly or explicitly adopting a climate justice framing and developing integrated solutions that synergistically addressed climate and unmet socioeconomic needs. Mindset shifts within communities around the need for climate action, alongside interventions that respond to local needs, have been significant and are documented in the case studies.[10]

Responses

The project established multisectoral urban labs[9] in all five cities as neutral convening spaces that brought together residents with representatives of civil society, academia, the private sector and government in a horizontal and co-production, rather than a consultative, format. It took time to establish trust between these organisations, especially if there was no past precedent of collaboration. The Buenos Aires lab built on pre-existing working relationships tied to the participatory reurbanisation process. In Brazil, community *mutirões* (collective work parties) and cultural events were central implementation mechanisms. The Recife lab formalised governance through a collective agreement, and Teresina's *Praça dos Sonhos* — a co-created community public space in the Residencial Edgar Gayoso social housing neighbourhood — became a social hub, placing social cohesion at the centre of the intervention model. In Mexico, the urban labs were built from the ground up, with priorities and actions defined locally as they progressed.

The labs strategically used small, quick-win interventions to raise awareness and build and maintain trust with community members. It was important to develop short-term, low-cost pilots that were co-designed and implemented by urban lab members to demonstrate feasibility, generate visible results and attract new participants before scaling could begin. The labs in all the cities adopted experimentation as a formal methodology.

Certain interventions had greater potential to promote adaptation and mitigation while also responding to local needs with limited budgets over a relatively short period of time. Urban nature-based solutions (NbS) became a strategic entry point in most contexts. Tree planting, green infrastructure and improved access to public spaces make climate action visible, tangible and locally owned, while responding to issues communities are facing, such as extreme heat, flooding and air quality.

To ensure they were relevant, the interventions were designed to address immediate community needs alongside climate goals, safety, access to public space, food security and mobility. In Argentina, for example, microclimatic monitoring and participatory science were embedded in the intervention design, generating quantitative evidence on temperature, humidity and thermal comfort alongside physical upgrades in a more technical, evidence-rich co-production model that sought to respond to extreme heat and climate challenges. A two-year network of sensors across Villa 20 revealed higher and more persistent heat exposure than at the city reference station, as well as significant microclimatic differences within the neighbourhood. UTCI analysis provided quantitative evidence of the potential of improved outdoor thermal comfort following interventions, while participatory interpretation connected these findings with residents' lived experiences of heat. The monitoring network gained growing recognition and support from the Buenos Aires city government, while the experience also generated interest in Rosario, opening opportunities for broader uptake. The Office of Territorial Data Generation of the Undersecretariat for Urban Planning's Directorate-General for Urban Anthropology maintains the network

Table 2. Core characteristics of the five urban labs

DIMENSION	NAUCALPAN	LEÓN	RECIFE	TERESINA	BUENOS AIRES – VILLA 20
Primary hazard emphasised	Urban flooding and heat exposure in public spaces.	Extreme heat, limited tree cover and stormwater challenges along urban streams.	Coastal flooding, sea level rise (45.7% of coastline high-vulnerability).	Extreme heat (>32°C, up to 340 days per year).	Extreme heat (acute urban heat island effect).
Starting trust conditions	Limited coordination among local organisations and institutions.	Active civil society, but limited cross-sector collaboration.	Technocratic planning history, scepticism due to unmet promises.	Distrust due to isolation and unreliable services.	Inherited legitimacy; built into an existing, legally backed settlement upgrading process.
Coalition/lab composition	Horizontal, externally facilitated, built from scratch. Multisectoral alliance of residents, community organisations, civil society, municipal government and academia.		Multisectoral alliance of residents, academics, civil society organisations, government.		IVC[31] team, four neighbourhood organisations, government agencies, academics, monthly MGP[32] from 2022.
Signature quick win	*Parque Revolución* (2023): pilot with shading, greening, play areas and safer pedestrian environments.	*Refugio Climático* (Climate refuge) (2026): co-designed climate adaptation pilot to test and refine the lab's participatory intervention methodology.	*Rota da Infância* (Childhood Route): child-friendly shared spaces (2022–26).	*Praça dos Sonhos* (Square of Dreams): the estate's first public space (2022).	Six permanent NbS interventions in public parks, school yards and passages. Heat monitoring network.
Other notable interventions	Three additional 2023 pilots: eco-friendly bus shelter, solid waste collection point, biofiltration garden along Río Hondo.	Four other 2023 pilots: waste management training; pedestrian safety improvements; public space regeneration and reforestation; bike lane extension.	*Artesãs do Pilar* (Artisans of Pilar): women's handicraft cooperative; support for waste-pickers and recyclers; waste bins; cultural festivals.	Road arborisation *Quintais Verdes* (green backyards) workshops *Festival da Cidadania* (one-off citizenship festival) Community and recycling centre using bioconstruction techniques and NbS.	Vertical gardens, rain garden, three murals *Archivo de la Memoria Ambiental* (Environmental Memory Archive), climate adaptation for informal settlements manual.

Table 2. Core characteristics of the five urban labs (continued)

DIMENSION	NAUCALPAN	LEÓN	RECIFE	TERESINA	BUENOS AIRES – VILLA 20
Dominant framing	Participatory planning for climate-adaptive public spaces addressing local needs.		Explicit racial and gender climate justice.		Heat reframed from environmental to urban justice /public health issue.
Evidence approach	Participatory assessments. Pilot testing. Pre- and post-intervention impact monitoring.		Community-led disaggregated census (2023).		Universal Thermal Climate Index (UTCI) simulations. Three-year microclimatic monitoring network.
Lab governance	Institutionalising via undergraduate curriculums.	Transitioning to a sustainability committee, with a university as the lab's institutional host.	Formal collective agreement (2025) Assessing legal-entity status (2025–27).	Directly pursuing independent legal status.	Formal collective agreement (2026) to work as a looser network node supporting participatory local climate governance with a shared vision and commitment to participatory just urban development.
External policy uptake	Climate adaptation criteria for municipal public spaces. The broader TUC experience also informed state-level urban development and mobility planning processes.	Lab-developed participatory methodology to be incorporated into León's Streamside Linear Parks Master Plan.	Fed into national *Periferia Viva* Guidebook and Network.		Absorbed into the Directorate-Generals for Environmental Policy and Strategy, and for Urban Anthropology Replicated in Rosario.
Immediate next step	Extending criteria to further sites.	Sustaining the lab through its sustainability committee and awaiting publication of the master plan.	Strengthening funding and executive nucleus.	Land regularisation Renewed push on *Quintais Verdes* workshops.	Climate adaptation manual as bridge to further replication.

and supports data analysis and visualisation through PowerBi, and the Undersecretariat for the Environment's Directorate-General for Environmental Policy and Strategy has incorporated it into the city's climate action plan.

Scaling in diverse contexts

A range of diverse factors consolidated or undermined scaling at local level, but participation was central in all five labs.

To overcome communities' initial scepticism about focusing on mitigation in the face of pressing local housing and basic service needs, the labs needed visible early wins before communities would engage deeply in collaborative processes. Small interventions were key to catalysing broader change. In all five cities, micro-transformations with larger potential helped shift institutional mindsets, unlock policy windows and/or build cross-sectoral relationships beyond the immediate physical footprint of the urban lab.[4,9]

Political volatility was and continues to be a persistent constraint in all three countries, to differing levels. Shifting political priorities, restructured government agencies, and/or weakened social coalitions threaten

continuity and efforts to scale. Such dynamics are not necessarily distinctive to this period of time or place, as volatility often interacts with local planning processes in all cities.

Scaling has taken a different approach in each context. In Mexico, the urban labs are directly shaping official urban planning instruments — León's Streamside Linear Parks Master Plan and Naucalpan's intervention criteria for the climate adaptation of public spaces — while embedding NbS into government procurement and public space interventions. The Naucalpan urban lab is influencing at state level, developing participatory guidelines for the municipalities of the State of Mexico, alongside capacity building for civil servants and academics for sustaining, scaling and replicating.

In Argentina, given the significant political changes and deprioritisation of climate change at national level, the Buenos Aires lab has focused on consolidating a robust technical evidence base (continuous microclimatic monitoring, UTCI simulations, pre/post/projected scenario modelling), strengthening local capacities to design, implement and manage new interventions, and developing a climate adaptation manual[11] as a bridge product that can be used by communities in other cities and by subnational actors who adopt the approaches piloted in Buenos Aires. After political restructuring fragmented the original coalition here, the lab evolved from a platform into a network node supporting participatory governance. The network has achieved impact and scale by expanding horizontally, sharing evidence, methodologies and practical knowledge with other neighbourhoods and cities rather than consolidating around a single territorial base.

In Brazil, community-led data have been useful for advancing rights-based efforts. Disaggregated censuses turned statistical invisibility into negotiating power, and the labs' governance lessons have fed into national policy. They have also been scaled by a range of actors including those who are part of the *Periferia Viva* network.[12] This is the most explicitly national-scale evidence of influence across the three city case studies.

Future agendas

Several universal lessons have emerged from the urban labs. First, they show that participatory multisectoral coalitions can serve as instruments of local climate governance, bridging communities, technical teams, and decision makers. Second, they have all demonstrated how climate action can and should be integrated formally into urban upgrading and housing policies at local and/or national levels — not as a sectoral add-on, but through cross-cutting governance commitments with dedicated budgets and ongoing monitoring. And third, they show that scaling cannot take place by blueprint. Rather, it requires a contextual, flexible approach to transferring capacities, methodologies, and trust-building approaches.

From these foundational learnings, a series of locally grounded agendas have also emerged.

In **Mexico**, the urban labs have focused on developing local planning processes that prioritise consultation and co-governance for co-produced approaches and solutions, promoting participatory processes that privilege experimentation as a standard urban planning tool that can link climate action with efforts to respond to immediate urban needs. In practice, this means identifying consensus around viable interventions and largely integrating diverse participants' expectations before committing to permanent policy.

In **Argentina**, where co-produced approaches are already a regular way of working within the urban lab, future efforts will focus on securing financing mechanisms to sustain and expand actions that have already proven to be successful in informal contexts. This includes blended finance, microcredit, and targeted public funding to make climate interventions more accessible and feasible. The project has established extreme heat as a priority urban risk in Buenos Aires and Rosario, generating local evidence, strengthening capacities and developing community-led interventions that have gained recognition and support from local governments, creating opportunities for their wider adoption.

In **Brazil**, the urban labs have formulated an explicit demand that climate action be framed around interventions that work for the communities that are most affected by climate change, and that city departments work across silos with women and community leaders, who are recognised as key actors for equitable climate action.

City case studies

4

Mexico

Testing before scaling: lessons from urban climate pilots in Mexico

In urban contexts marked by institutional mistrust, polarisation, and multiple social crises, advancing climate agendas requires awareness raising, building legitimacy and generating visible results from the outset. In Mexico, urban labs emerged in environments where participatory mechanisms were perceived as non-binding and climate action was not an immediate priority. Against this backdrop, experimentation served as a turning point, enabling a shift from dialogue to action, building trust across sectors and demonstrating feasibility. Building on these lessons, urban labs in Mexico today influence permanent strategic projects and local public policies with greater social awareness and institutional support.

Establishing participatory processes in fragmented contexts

The Mexican labs emerged in a context marked by a lack of legitimacy and a scarcity of formal mechanisms for participation in urban planning. Although institutional spaces for consultation or participation exist, they are often perceived as having little binding power or being co-opted by political or economic interests, while social polarisation and institutional fragmentation limit coordination between different sectors of society, hinder the development of shared agendas and reduce people's willingness to take political risks.

In Naucalpan,[13] social organisation appears fragmented: collectives and organisations have few shared spaces in which to coordinate their efforts or visions. León,[14] on the other hand, has an active and well-coordinated civil society, but there is persistent mistrust of participatory spaces promoted by local government, which undermines their legitimacy. Added to this scenario, social and urban challenges influence everyday priorities in both cities. In many neighbourhoods, the immediate priorities are safety, employment and basic services, and climate action is not perceived as urgent.

So the challenge here was twofold: design a synergetic climate agenda that was relevant to everyday concerns and rebuild the minimum conditions of trust necessary for collective action. When it launched in both cities, TUC aimed to create climate-focused urban labs that could establish themselves as legitimate and neutral spaces where different sectors would be willing to listen to each other, collaborate and remain engaged.

Experimentation as a means of consolidating collaboration

TUC enabled the creation and consolidation of multisectoral meeting spaces in both cities. The labs are perceived as spaces with a horizontal hierarchy where participants can exchange perspectives and reach agreements, largely facilitated by external support, where members can strengthen their technical capacities and build personal and professional networks with organisations and individuals from different sectors.

The labs incorporated on-the-ground experimentation as a strategic mechanism to demonstrate capacity for action and show that ideas discussed could be put to the test autonomously. This step transformed a potentially consultative space into one oriented toward collaborative action. The experimental activities in León and Naucalpan were designed as low-cost, short-term and rapidly implementable interventions. Their temporary nature allowed for the evaluation of their social acceptance, institutional feasibility and urban impact before scaling up.

In 2023, the labs implemented eight experimental activities in the two cities, focused on improving public spaces, active mobility, waste management and incorporating green infrastructure. Although they addressed environmental and climate objectives, these interventions also responded to communities' immediate needs — such as greater pedestrian safety and more dignified gathering spaces — strengthening their relevance locally.

The experiments were collectively decided, designed and implemented by the lab members. Actions began with broad discussions on urban and climate issues, before members developed a shared vision and action plan, prioritising topics suitable for experimentation, according to their local relevance and political feasibility. They autonomously contributed their experience and resources, handling permits, donating materials, facilitating activities, assigning work crews, providing technical support and engaging in community outreach. During the planning and implementation phases, lab members strengthened their capacities as legitimate decision makers in the city, reinforcing cross-sectoral accountability.

Building trust and promoting dialogue

Experimentation helped raise awareness in the general community and build trust among lab members by demonstrating that participatory spaces not only promote dialogue but also generate tangible results. Temporary interventions allowed lab members to test ideas, identify issues with a higher level of consensus among stakeholders, assess public acceptance and recognise real opportunities for collaborative work and mutual learning. This facilitated the incorporation of new participants, particularly residents, whose interest in the process was strengthened by observing visible transformations in the area and their potential involvement as agents of change.

Experimentation in León and Naucalpan served as a learning and reflexivity phase that helped refine priorities, manage conflicts, and clearly identify areas of action where the urban labs could have greater influence on public policies and specific projects. Both labs are now promoting implementing NbS that align with strategic local governments initiatives.

Using the rehabilitation of *Parque Revolución* as a pilot case,[15] the Naucalpan lab is developing intervention criteria for climate-adaptative public spaces to inform and guide future public space interventions at the municipal level, ensuring rehabilitations planned by local government include NbS, increase vegetation coverage and incorporate the lessons learned from *Parque Revolución*. The León urban lab is developing and testing a participatory intervention methodology to transform streams into linear water parks, using climate adaptation criteria, which will be incorporated into the local government's 2026 update of the Leon's Streamside Linear Parks Master Plan. As well as generating technical inputs and permanent transformations, this process will strengthen local actors' capacities for cross-sectoral coordinated work and empower them to promote and implement these comprehensive approaches in their own sectoral contexts.

Capacity building for strategic actors across different sectors aims to enhance the sustainability, scalability and replicability of the lessons learned from both labs. By designing and delivering courses for local and regional public officials and academics from key institutions in both cities, participants have raised awareness and equipped them with tools to incorporate climate governance into their own spheres of action.

The labs are implementing different institutionalisation strategies to further guarantee the long-term sustainability of their governance models. In León, a Sustainability Committee, composed of urban lab participants and led by academics, will ensure the continuity of the lab and its collaborative processes over time. In Naucalpan, efforts are underway to institutionalise courses and activities within the curriculums of selected undergraduate programmes to integrate the lessons, experiences and methodologies of the work of urban labs in Mexico.

Promoting participatory climate planning

Traditional urban planning is often limited to consultative exercises that do not guarantee genuine and sustained community involvement. In the face of urban and climate action challenges, it is necessary to move towards governance models that structurally integrate multisectoral participation into the definition of public policies and strategic projects.

The experiences of the León and Naucalpan urban labs show that experimentation is a fundamental part of planning because it links climate action with immediate urban needs. This encourages different sectors to participate in intervention design and implementation, delivering visible short-term results and offering a mechanism to identify consensus and disagreements before scaling up to permanent policies.

Beyond immediate results, experimentation allows for a reorientation of the strategic perspective. By testing interventions on the ground, the labs identified concrete opportunities to integrate NbS and resilience criteria into existing projects. This transformed the way urban initiatives are conceived, as they ceased to respond solely to institutional or budgetary inertia and began to be built on a logic of shared responsibility, continuous learning and adaptation.

As a result, the actions being promoted in both cities incorporate a more participatory and robust climate-focused approach, alongside capacity building to ensure their continuity, laying the groundwork for scaling up and replicating these practices in other contexts.

Brazil

Centring climate justice in cities

The Brazilian urban labs operate in two peripheral territories: Comunidade do Pilar, a low-income neighbourhood in Recife's Old Town[16] and Residencial Edgar Gayoso, a social housing neighbourhood in the northern outskirts of Teresina.[17] Both have built alliances[18] that seek to address the integrated challenge of addressing the impacts of the climate crisis while simultaneously tackling deep-rooted social inequalities and traditional governance limitations.

At the heart of both urban labs is the principle of climate justice, as these vulnerable communities contribute minimally to emissions but struggle with severe — yet distinct — climate threats that exacerbate their vulnerability.

With 45.7% of its coastline lying within high-vulnerability zones, Recife is highly exposed to sea level rise and coastal flooding.[19] Situated on an island in the city's historic centre, Comunidade do Pilar faces occasional flooding from extreme rainfall events, while its residents live in low-quality social housing or precarious shacks, with critical gaps in sanitation and access to secondary schools and recreational facilities.

Teresina has warmed at roughly twice the global average in recent decades,[20] and endures some 129 days a year above 35°C[21] and close to 100 days when humidity drops to 30% or below.[22] These conditions are set to intensify as heatwaves grow more frequent and more prolonged.[20] In Residencial Edgar Gayoso, this thermal exposure is compounded by a lack of quality green spaces and housing designed with poor thermal comfort, with 90% of residents reporting that their

homes are unbearably hot.[23] The community exemplifies the broader challenges of peripheral urbanisation across Brazil: isolated social housing, disconnected from urban opportunities and underserved by public infrastructure.

Despite their geographic contrast, both territories share a condition of sociospatial segregation and climate risk. This exclusion falls disproportionately on low-income, Black communities, with women-headed households bearing a particularly heavy burden. Community-led censuses conducted in 2023 across both territories reveal overlapping layers of vulnerability. Residents predominantly have low incomes: around half of all household heads earn no more than one minimum wage per month and over half depend on social welfare transfers to meet their basic needs. Most household heads identify as Black (73% in Comunidade do Pilar and 87% in Residencial Edgar Gayoso) and women lead most households in both territories (76% and 66% respectively), many without a partner.[23]

The lack of governance capacities completes the picture. Urban planning in both cities has historically been technocratic and siloed, with climate policy rarely integrated into housing priorities. Decades of unfulfilled top-down interventions have eroded institutional trust and residents frequently perceive climate change as a distant concern in the face of immediate basic needs.

The urban labs aim to bridge the gap between global climate crisis narratives, strategic city planning and local neighbourhood action. By replacing top-down technocratic models with shared governance, they seek to build community trust through participatory co-creation and inclusive, low-carbon urban transformation.

Quick-win interventions to build trust and develop capacities

Like other urban labs in the programme, the Brazilian urban lab alliances brought together residents, academics, civil society organisations and government representatives to co-create solutions tailored to the area's challenges. Their strategies combined quick-win interventions designed to build trust and demonstrate collective capacity with longer-term projects aimed at structural change towards the right to the city.

In **Teresina**, the alliance's most emblematic achievement was creating the *Praça dos Sonhos* in 2022, Residencial Edgar Gayoso's first public space, co-designed via a participatory process and built through a combination of public work and community *mutirões*. The square has since become a hub of social life, gathering people for leisure, markets and events. Other key initiatives include road arborisation to enhance cooling, the *Quintais Verdes* workshops (2023) to promote greenery and food security through home gardens, recycling and composting workshops, the *Festival da Cidadania* (2023–24), which brought vaccination, ID cards and other public services directly into the territory, and the design of a permanent community centre and recycling centre using bioconstruction techniques and NbS (2023–24).

In **Recife**, the alliance's most emblematic achievement was the *Rota da Infância,* a series of four tactical urbanism *mutirões* (2022–26) that transformed local streets into child-friendly, shared spaces with playful ground paintings, curb extensions and tree planting. Addressing the lack of safe public spaces, the initiative was co-designed and collaboratively implemented by the alliance and local residents. Another set of initiatives focused on improving community waste management, including the *Artesãs do Pilar* (2023–24), which trained 24 women to produce papier-mâché handicrafts from recycled materials, linking waste reduction with income generation; support for local waste-pickers to strengthen their organisation and recycling activities (2023); the installation of waste collection bins (2025); and cultural festivals to strengthen community cohesion (2024 and 2025).

Beyond individual interventions, the alliances have driven a broader shift in how climate governance is approached and practised. By treating residents as co-producers of knowledge and solutions rather than beneficiaries, both alliances challenged the technocratic, top-down models that have historically excluded peripheral communities from urban decision making. In Recife, the alliance formalised this shift through a collective agreement[24] establishing shared operational rules and responsibilities — a replicable governance model now serving as a reference for other urban contexts.

These local actions function as proof points for systemic change and have parallels with other cities in the project, demonstrating that climate-resilient, community-led urban transformation is not only possible but replicable and that the populations most affected by the climate crisis must be at the centre of solutions.

Pre-conditions for scaling

The Brazilian urban labs have generated a rich evidence base of lessons drawn from both achievements and setbacks, offering insights for scaling and replication.

Trust as a precondition: in both cities, meaningful participation proved impossible without first establishing credibility. Due to unfulfilled promises, residents in Comunidade do Pilar carried decades of scepticism, while in Residencial Edgar Gayoso, geographic isolation and unreliable access to public services had bred distrust in the public sector. Both labs responded with visible, quick-win interventions — the *Praça dos Sonhos* and *Rota da Infância* — providing tangible evidence that collective action could yield results. Sustained presence and the recognition of shared goals deepened this trust over time.

Governance maturity and institutional tensions: the initial coordination role created an unintended hierarchy, with alliance members perceiving the lab to be externally owned by the international project. Decentralisation into working groups redistributed responsibility, though too many parallel groups can fragment collective vision, as the Recife lab learned before consolidating back into a single structure. A key lesson is that governance models must be flexible and evolve over time. The collective agreement formalised in Recife in 2025 embodies this principle with shared rules that are independent of external funding or political cycles.

Bridging the climate narrative gap: a consistent tension emerged between global climate agendas and residents' immediate priorities of poverty, food insecurity and access to basic services. The urban labs learned that climate action only gains traction when framed through local needs. Initiatives such as *Artesãs do Pilar*, which linked recycling with women's income generation, the *Quintais Verdes* workshops and arborisation initiatives, which combined natural cooling with food security, demonstrated that climate and socioeconomic goals need not compete with each other.

Inclusive participation requires adaptation: early meeting formats — held on weekday afternoons, often online — systematically excluded residents with work commitments or without internet access. Shifting to in-person evening and weekend gatherings within the communities, with childcare provision, enhanced women's participation and leadership. The diversity of actors demands time to align interests, expectations and working rhythms.

Data as a tool for rights: community-led censuses in both cities equipped residents with disaggregated local data, transforming statistical invisibility into a basis for negotiation with public authorities. Training community members as enumerators also built local capacity to collect vital data in the future.

Both alliances stand at a pivotal moment of transition. The **Recife** alliance is in a structured two-year maturation phase (2025–27), assessing the operational rituals of its collective agreement before deciding on a formal legal structure. Immediate priorities are strengthening the executive nucleus, diversifying funding sources, advancing the *Rota da Infância,* improving the recently installed waste bins and running environmental education activities on their use. The **Teresina** alliance was operating autonomously, without external coordination and pursuing independent standing. More recently, it carried out a new round of the *Quintais Verdes* initiative in response to community demand, building on previous successes and high levels of participation.

Both alliances face a common long-term horizon, ensuring the governance models, social technologies and community leadership cultivated over years of work outlast any single project, funder or political cycle and can serve as living references for other territories navigating the same challenges.

Scaling climate-just transformation across cities

The experiences of Comunidade do Pilar and Residencial Edgar Gayoso point to the following four pathways for scaling climate-just urban transformation.

Moving towards multisectoral shared governance models: The co-creation of governance frameworks — such as Recife's collective agreement — codifies roles, decision-making processes, monitoring and operational rituals that allow alliances to adapt over time and function independently of external funding or electoral cycles. This also requires the documentation of governance processes and methodologies, not merely outcomes, so that other territories can adapt and replicate them.

Bridging the gap between global climate narratives and local needs: In communities like Comunidade do Pilar and Residencial Edgar Gayoso that contribute minimally to emissions and face far more pressing basic needs, mitigation narratives hold little relevance. Climate justice demands a focus on adaptation in such communities, not burden-shifting. This means connecting climate agendas to residents' own priorities — health, food security and employment — rather than imposing a distant narrative onto communities who are awaiting basic rights.

Building mutual trust: Prolonged presence in a territory and quick-win interventions help overcome initial scepticism and create conditions for co-creation.

Mainstreaming climate action into every urban policy: This is a vital cross-cutting commitment, particularly when it comes to social housing and informal-settlement upgrading programmes.

Driving these priorities requires actors from multiple sectors. This includes municipal government, working across departments rather than in silos, residents — particularly women — recognised as leaders and gatekeepers of local knowledge, and academics, civil society organisations and private sector actors who can provide technical assistance, legal support, social mobilisation and financing.[25] Scaling within the same city offers a strategic advantage, as existing trust and relationships facilitate the formation of alliances in new territories.

These lessons already have national reach, influencing multilevel governance arrangements. The experiences of the two Brazilian labs — especially in climate justice, inclusive governance, co-creation and strategic interventions — have informed the *Periferia Viva* Action Plan Guidebook and contributed to shaping the *Periferia Viva* Network.[26] Notably, the inclusion of climate justice

in the updated guidelines reflects the direct influence of lessons from the urban labs, demonstrating how locally generated knowledge can seed change at scale.

Argentina

Unlike the other labs, the Buenos Aires urban lab did not start from scratch; rather, it was built into an existing, legally backed upgrading process. When the TUC project launched in late 2021, IIED-América Latina, already a trusted actor locally, used pre-existing structures as the entry point, so the lab inherited political legitimacy, community relationships and institutional buy-in from day one.

Coalition building in 2021 focused on mobilising a diverse membership: the IVC's coordination team and technical staff, four neighbourhood organisations with various political alignments and government agencies including the Office of Territorial Data Generation of the Directorate-General for Urban Anthropology and the Office of Climate Change of the Directorate-General for Environmental Policy and Strategy.

From 2022, the urban lab held monthly in-person meetings of the MGP, moving from priority-setting and participatory design workshops into implementation by 2023.[27]

From reurbanisation to climate action: establishing an urban lab

In the Villa 20 neighbourhood of Buenos Aires, the urban lab emerged within an ongoing reurbanisation process, helping expand its agenda by framing extreme heat as an urban and climate justice issue. While infrastructure works had reduced flooding risks, heat remained an under-recognised risk shaped by dense urban form, limited vegetation, precarious housing, overcrowding and unequal access to public space. The urban form in Villa 20 intensifies heat exposure, as high land occupation, overcrowding, narrow passages, limited tree canopy, impermeable surfaces and heat-absorbing materials generate acute urban heat island effects, compounded by unmet basic needs. During heatwaves, these conditions significantly increase thermal stress, directly affecting health, wellbeing and daily activities.

Heat exposure intersects with structural social inequalities. Overcrowded and precarious housing, limited access to green space and scarce technical and financial capacity constrain households' ability to implement adaptive measures such as envelope improvements or cooling systems. Extreme heat is therefore largely absent from neighbourhood agendas and weakly embedded in public policy, despite its disproportionate impact on low-income populations. The absence of systematic monitoring and temperature data in informal settlements further obscures its links to specific living conditions.

Climate considerations — particularly heat mitigation — were not systematically integrated into the reurbanisation process and decision making. Fragmented mandates and disconnects between climate agendas, urban upgrading policies and neighbourhood-scale practice have limited effective action. The governance model had not clearly linked adaptation, mitigation, urban justice and upgrading processes.

This challenge was compounded by rapid institutional change. After an initial phase of participatory continuity through the MGP and pilot implementation via the urban lab, restructuring led to the dissolution of key counterparts, reduced participatory spaces and weakened social coalitions. The core challenge was therefore not only increasing greenery; it was also embedding climate action and urban justice within governance systems that can endure political volatility and enabling systemic urban transformation.

Establishing a platform for co-production, experimentation and institutional articulation

A local coalition of actors responded by establishing the urban lab as a space for co-production, experimentation and institutional articulation in Villa 20. Rather than a conventional project platform, the lab functioned as an interface between residents, neighbourhood organisations, City of Buenos Aires technical teams, researchers and intermediary actors, enabling the co-design of interventions while generating situated knowledge on heat exposure, thermal comfort and public space use, and sustained participatory capacities emerging from reurbanisation.

Since 2021, the Buenos Aires lab has established six demonstrative interventions, a heat monitoring network and several local training and awareness raising sessions activities — including vertical garden production with families and school students, community murals and the *Archivo de la Memoria Ambiental* (Environmental Memory Archive) developed by the *Archivo de la Memoria Popular de la Villa 20* (see Box 1) — which reinforce and complement each other. The volume of activities has helped generate momentum and mindset shifts.[10]

NbS became the strategic entry point. Tree planting, vegetation in narrow passages, permeable pavements, rain gardens and shading elements offered visible, tangible responses to extreme heat that could be locally 'owned'. By prioritising NbS over purely technocratic solutions, the lab made climate action concrete and accessible, linking adaptation to everyday neighbourhood improvement and demonstrating that informal-settlement upgrading and climate action can and must be planned together.

Collaborative action was driven through small-scale, demonstrative interventions. These micro-transformations — one passage or public space at

BOX 1. ARCHIVO DE LA MEMORIA POPULAR DE LA VILLA 20

The *Archivo de la Memoria Popular de la Villa 20* is a community archive collective formed in 2018 to preserve and activate the neighbourhood's popular memory, its intangible heritage, during a period of rapid physical transformation through reurbanisation. Within the TUC project, the archive ran a film, memory and environment workshop with six young people from Villa 20, training them in audiovisual techniques while also conducting a community environmental mapping process, which involved:

- Walking the neighbourhood to document environmental conflicts — flooding zones, lack of trees, waste management problems, water access issues, noise pollution, abandoned cars and so on
- Interviewing residents to capture their perspectives on what counts as an environmental problem
- Recovering historical environmental memory — identifying where a lagoon, rubbish dump and car cemetery once stood and connecting those histories to present-day problems like disease and failed vegetation
- Visiting the old Riachuelo riverbed with representatives of the Indigenous Querandi Nation to understand pre-colonial territorial history
- Participating in and filming the TUC environmental roundtables
- Producing a video as a living, evolving version of the map.

The objective of this activity was not just documentation; it was political. The mapping gave voice to residents who do not usually participate in formal spaces, helped identify environmental priorities for policy advocacy and built a sense of agency among the young people involved, who came to see themselves as environmental and political actors in their own neighbourhood.[30]

a time — were connected to broader debates on upgrading, urban climate policy and the right to the city. These were designed as lasting NbS improvements, co-designed and implemented with community participation, with residents and local organisations taking an active role in their design, management and maintenance. Fine-scale monitoring, citizen science and shared data generation strengthened legitimacy and informed decision making.

This multiscalar strategy enabled coordination between social groups that previously engaged government separately, brought new municipal teams into informal settlement contexts and recognised the role of cooperatives and community organisations, strengthening local agency. The lab fostered leadership by convening actors, building locally generated data and evidence, sharing capacities and enabling committed participants to act as multipliers beyond the neighbourhood, thus contributing to broader urban systems change.

The transformations were physical, institutional and cultural. The lab progressively introduced climate action within the community, building on lived experiences, and co-produced knowledge to reframe extreme heat as an urban justice, public health and planning issue rather than an isolated environmental one. This influenced technical teams, community leaders and public officials, contributing to lasting mindset shifts about integrating climate considerations into reurbanisation.

Integrating climate action into informal-settlement upgrading and generating locally grounded evidence

The urban lab generated governance experience to integrate climate action into informal settlement upgrading processes — which was previously almost non-existent in Argentina — while also producing robust, locally grounded evidence on climate action in informal contexts.

Through the urban lab, community members, researchers and local government teams combined physical interventions with continuous on-site monitoring of temperature and humidity, and UTCI-based thermal comfort assessments. Over three years of continuous microclimatic monitoring — including two years of complete data series — the urban lab has documented significant differences in temperature and humidity within Villa 20, as well as higher and more persistent heat exposure than at the city reference station. Complementary UTCI analyses have shown improvements in outdoor thermal comfort of up to 5–6°C during critical daytime hours in selected intervention scenarios. This technical evidence was complemented by qualitative insights, including changes in public space use, increased time spent outdoors, strengthened institutional collaboration and shifts in the perception of climate risks.

Beyond the pilot interventions, NbS measures developed through the urban lab were incorporated into public works tender specifications issued by the IVC. This represents a concrete step towards embedding climate adaptation criteria into regular informal-settlement upgrading practices, although their effective implementation remains dependent on future public works decisions and priorities.

In this same vein, the urban lab shared information on the integration of climate action into informal settlements with the national government's Secretariat for Socio-

Urban Integration — an entity that currently lacks funding for project implementation, yet is responsible, alongside local governments, for urban improvement processes in the country's informal settlements.

The climate adaptation manual, which distills lessons learned from specific local practice, serves as a tool for knowledge transfer and replication. Transforming the work carried out in Villa 20 into a methodology that others can apply independently of the urban lab, the manual codifies knowledge about the process and the solutions, enabling self-builders to integrate these approaches without relying on technical experts or special funding.

Several lessons have emerged from this urban lab. First, small and community-managed NbS interventions can deliver measurable thermal improvements while catalysing broader institutional and social change. Micro-transformations, such as greening a passage, can shift mindsets, demonstrate collaborative governance in practice and integrate diverse knowledge systems. Second, thermal comfort is a powerful entry point, as grounding climate discussions in lived experience makes adaptation tangible and socially relevant. And third, adaptability is essential. Sustaining transformative trajectories required continuous adjustment to shifting political and institutional contexts, supporting emerging agents of change and following the evolving roles of coalition members.

Scaling to Rosario

The project has scaled the approach to Argentina's third-largest city, Rosario, providing a concrete example of how learning from Villa 20 has been scaled beyond Buenos Aires. Rosario faces five main climate threats: increasing heatwaves, rising average temperatures, more tropical nights, torrential rainfall and declining flow in the Paraná River. More than a third (34.64%) of its population[28] — mainly in the poorer, denser neighbourhoods with low tree cover, high surface impermeability and poor access to water and health services — is estimated to be at high risk of heat-related health impacts.

The Barrio Moreno intervention

The project focused on a single city block (Manzana 77) with four narrow residential passages, home to 43 families (129 people), installing 335 square metres of NbS[29] — including pergolas, green trellises and planting — to address urban heat.

The design was explicitly co-produced with residents through two workshops: one to develop the proposal collaboratively (using drawings and community discussions); and the other, to validate it. This was followed by environmental education sessions on composting, plant care and energy efficiency, and 'green guardian' training for residents so they can maintain the interventions.

Ten heat sensors were then deployed across the block, measuring temperature, humidity, pressure and particulate matter in real time using municipally-developed technology, with data visualised through a live dashboard. The monitoring aims to build a baseline for evaluating heat impacts in low-income neighbourhoods and develop a replicable methodology for similar areas across the city.

The methodology, participatory design, NbS intervention and real-time monitoring are explicitly framed as a model for other informal settlements in Rosario, which the municipality is positioning within its broader future informal settlement intervention plans and in line with its 2030 Climate Action Plan, with formal mitigation and adaptation targets. As the city where the municipality replicated Buenos Aires's model, the Barrio Moreno pilot is a clear case of horizontal, city-to-city scaling.

Reflections on convergence and divergence

5

The five labs converge on a shared starting point and a shared method. All five began in conditions of institutional fragmentation or low trust in formal governance; even Buenos Aires, which inherited legitimacy from an existing upgrading process, later lost ground as that process was restructured. Each lab responded the same way, using small, fast, low-cost interventions to build trust before attempting anything at scale. NbS became the near-universal entry point, addressing adaptation as well as mitigation, with each lab renegotiating the original mitigation-focused brief in the face of communities' more immediate priorities: adaptation, safety, jobs and basic services.

Political volatility, elections, restructuring and budget pressures disrupted every lab. None scaled by copying physical designs. Instead, they all transferred methods, capacities and a trust-building approach, adapted to the local context. And each has produced a durable institutional artefact — a plan, a guidebook or network, a criteria document, a formal agreement, or a maintained monitoring system — that outlives the project.

Where the cities differ is in their starting position, framing and hazard. Buenos Aires is the outlier on starting position, having inherited relationships and legitimacy that the other four had to build from zero. Framing follows national lines: the Mexican labs centred their work on participatory planning; the Brazilian labs' work was built explicitly around racial and gender climate justice; while the Argentinian lab paired a similar justice reframing with heavy quantitative evidence, principally UTCI thermal-comfort modelling. In Brazil, the focus was on two hazards — flooding in Recife and heat in Teresina; in Argentina it was heat; and in Mexico, the work was led by greening rather than focusing on a particular hazard.

The labs diverge most in their institutional endpoints. Mexico's labs feed directly into government plans and criteria documents; Brazil's route runs through a national programme, *Periferia Viva*, and towards autonomous legal status for the labs; Argentina's process has been replicated horizontally into another city. They also diverge in their approaches to coalition governance. Recife, for example, codified a formal collective agreement, while León and Teresina have taken more incremental routes — an academic-led committee and a bid for independent legal status, respectively — rather than adopting a single charter. Tables 3 and 4 examine the labs' scaling pathways and how they converge and diverge

Table 3. Scaling pathways, by city

CITY	SCALING PATHWAY	KEY LEARNING	STATUS NOW
Naucalpan	Locally tested pilot (Parque Revolución) generalised into formal intervention criteria for municipal public space, then pushed upward into state participatory guidelines Capacity building for civil servants embeds the approach in people, not just documents.	In a context where formal participation was seen as non-binding, demonstrating feasibility on the ground first is what earned the right to shape permanent policy — legitimacy had to be built bottom-up before criteria could travel into procurement and planning.	Criteria guides public-space interventions. State-level guidelines are in development. Institutionalisation is under way via undergraduate curriculums.
León	Participatory methodology for transforming urban streams into linear parks, tested through the *Refugio Climático* pilot and planned for inclusion in León's Municipal Planning Institute's Streamside Linear Parks Master Plan.	Where civil society is strong but distrustful of government, the fastest route to durable influence is embedding a tested methodology directly into a binding plan rather than waiting for institutional trust to improve first.	Master plan is pending publication. A locally led sustainability committee, with support from a host university, is actively working to ensure the lab's long-term continuity beyond the project.
Recife	Codified its own governance as the replicable product: a formal collective agreement documenting roles, decision making and rituals Fed those lessons into the national *Periferia Viva* Guidebook and Network.	What scales fastest is not the physical intervention but the documented governance process behind it. The Recife lab's own experience — fragmenting into too many parallel working groups before consolidating back — shows that decentralisation needs limits and that going deliberately slowly (a two-year maturation phase) can be a scaling strategy, rather than a delay to one.	In a structured 2025–27 maturation phase before committing to legal status Climate justice — not originally part of *Periferia Viva's* brief — is now embedded into the national programme as a direct result of this urban lab's work.
Teresina	Pursuing independent legal status directly — faster and more autonomous than Recife's route — to broaden fundraising and reduce reliance on external coordinators.	A single, highly visible quick win (*Praça dos Sonhos*) can anchor years of subsequent institution building, but sustaining that momentum required securing land and legal footing of its own, not just continued goodwill.	Land regularisation for a permanent community/recycling centre is under way. Renewed focus on the *Quintais Verdes* initiative. Same national *Periferia Viva* uptake as Recife.
Buenos Aires	Two simultaneous tracks: Vertical absorption into government machinery (the Office of Territorial Data Management of the Undersecretariat for Urban Planning supports the monitoring network and data analysis, NbS criteria have been written into public works tenders), and solutions incorporated in the City of Buenos Aires' revised Climate Action Plan; horizontal replication to a different city (Rosario), carried by a purpose-built climate adaptation manual.	When political restructuring fragments the original coalition, scaling does not have to stop — it can continue if the lab reorients from a territorial platform into a looser network node supporting local participatory climate governance, spreading method and evidence rather than depending on one structure surviving intact. Three years of microclimate monitoring and data generation proved essential to survival in a national context where climate had been deprioritised.	The model was replicated in Rosario's Barrio Moreno pilot and is expanding to other neighborhoods as part of the city's intervention plan in informal-neighbourhood upgrading processes aligned with Rosario's 2030 Climate Action Plan. The original coalition is now operating as a distributed network and consolidating its actions by committing to collective working.

Table 4. Where scaling converges and diverges

THEME	WHERE THEY CONVERGE	WHERE THEY DIVERGE
Precondition for scaling	Scaling could not start until trust and legitimacy were established. Visible early wins were a precondition, not an accelerant.	Buenos Aires moved faster, having inherited legitimacy from an existing upgrading process. The other four had to build that trust from zero first.
What actually transfers	None scaled by copying physical designs. All transferred methods, capacities and a trust-building approach instead.	Mexico: tested criteria into policy. Brazil: a documented governance model and disaggregated data. Argentina: quantitative evidence and a purpose-built bridge document.
Direction of travel	Every lab achieved influence well beyond its original pilot site.	Mexico: scaled upward into binding government instruments. Brazil: scaled outward into a national programme and towards institutional autonomy. Argentina: scaled both vertically (ministry absorption) and horizontally (to Rosario).
Institutional landing point	Every lab produced a durable artefact that is now carrying the scaling forward, rather than depending on personalities or a single project cycle.	Mexico: a binding master plan (León) and criteria plus curricula (Naucalpan). Brazil: a collective agreement pending legal status (Recife) and direct pursuit of legal independence (Teresina). Argentina: a formal collective agreement to operate as a loose network node supporting participatory climate governance (Buenos Aires).
Threats along the way	Political volatility — elections, restructuring, budget pressure — disrupted every lab's work.	Mexico: stayed on a fairly linear path. Brazil: deliberately slowed down (Recife). Argentina: had to restructure from platform to network node (Buenos Aires).

Concluding remarks

6

Significant tensions persist in the overarching approach. Climate change and informal-settlement upgrading have lost priority in national and local agendas. Social organisations have weakened and some governmental counterparts have been restructured, even as technical teams remain committed to evidence generation and monitoring. The scaling of pilot solutions is constrained by rigid regulatory and procurement frameworks and the absence of long-term policy continuity. There is also persistent tension between producing rigorous technical evidence and translating it into policy decisions, particularly in volatile political environments.

This raises a core question: how far can localised action realistically catalyse systems change without sustained institutional backing? The Villa 20 experience suggests that localised action can catalyse systems change, but only when it is grounded in genuine co-production, generates credible evidence, shows benefits and operates through networks capable of outlasting any single institutional cycle. This is precisely the governance model that the urban lab has built in Villa 20.

As political conditions shifted and leadership weakened, the Buenos Aires lab's original positioning within the reurbanisation governance framework evolved towards more targeted interventions led by specific groups, preserving momentum while expanding outwards. Structural gains — such as municipal management of monitoring systems and incorporating nature-based criteria into public works tender documents — represent enduring, though fragile, advances, as their effective implementation and continuity remain largely dependent on institutional commitment and political priorities.

The Buenos Aires lab now stands at a transition between demonstration and knowledge scaling. The Climate Adaptation Manual[11] serves as a bridge product linking practice, policy and replication. Increasingly operating as a network node rather than a single platform, coalition members deepen lines of work — on research, training, policy dialogues and community actions — sometimes under the lab's umbrella or through new coalitions inspired by it, connecting local experimentation to broader urban systems transformation.

Connecting mitigation and adaptation in the context of settlement upgrading – a future agenda

Pathways for transformation lie in embedding climate action, particularly heat mitigation, at the core of informal-settlement upgrading and urban policy, moving beyond isolated pilots towards institutional integration. This includes:

- Formally incorporating climate action criteria — including NbS and their contributions to thermal comfort, flood mitigation, water and air quality, biodiversity and wellbeing — into reurbanisation and neighbourhood improvement programmes
- Recognising extreme heat as a priority urban risk in low-income areas, supported by clear mandates, dedicated budgets and monitoring systems
- Institutionalising participatory and multiactor coalitions as instruments of local climate governance, as urban labs demonstrate that collaborative platforms can bridge communities, technical teams and decision makers, enabling co-production of knowledge and more legitimate, context-responsive solutions
- Linking physical mitigation and adaptation measures, which are often inseparable, to financial mechanisms tailored to informal contexts, such as blended finance schemes, microcredit and targeted public funding windows to make adaptation accessible and sustainable.

Key levers of change include municipal housing and public space agencies, climate and planning departments, community organisations, academic institutions and intermediary actors capable of convening coalitions.

Scaling requires replicating governance processes and capacities and aligning neighbourhood experimentation with broader urban climate strategies while strengthening local agency.

Looking forward

7

The urban labs in Mexico, Brazil and Argentina collectively demonstrate, across different urban contexts, that transformative climate action in cities is not primarily a technical problem; rather, it is a governance problem. The tools and knowledge already exist in the communities that are most exposed to climate risk. Technical and political actors at city level have gained institutionalised knowledge and embedded approaches such as green infrastructure as part of the process, and have extended this to other cities. The model is being extended in Rosario by the local government, but with community participation and consensus. What is often missing is the institutional architecture to scale that knowledge into genuine dialogue with decision making and the political will to treat participation as a precondition for effective action rather than a procedural add-on.

Where the labs have succeeded in ways that are measurable, replicable and influencing policy, it is because they created spaces where residents, civil society, the private sector, academia and government could build trust slowly, experiment visibly and develop a shared stake in outcomes. And although this model does not transplant wholesale from one city to another, the underlying logic — that legitimacy precedes scale and co-production is not simply a slower route to the same destination, but a fundamentally different way of doing climate action — does.

One of the most persistent expressions of this participation deficit is the assumption that mitigation and adaptation can be cleanly separated, that reducing emissions and building resilience are distinct workstreams, to be planned and funded in parallel but never truly together. In practice, that distinction breaks down quickly. Communities in Recife face coastal flooding, while in Teresina, they endure temperatures above 32°C for up to 340 days a year; residents of Villa 20 in Buenos Aires live with the compounding effects of dense, heat-absorbing urban fabric and almost no tree canopy. In León, communities face extreme summer heat and limited tree cover, while in Naucalpan, they struggle with recurrent flooding. These are not communities that can afford to sequence their climate response, tackling mitigation first and returning to adaptation later. Nor do their carbon footprints make mitigation the natural entry point.

What the labs found, across all five cities, was that the most effective interventions were those that simply refused the separation. NbS simultaneously reduce urban heat, manage stormwater, sequester carbon and improve access to quality public spaces. The *Praça dos Sonhos* in Teresina and *Rota da Infância* in Recife are neither adaptation nor mitigation projects; they are neighbourhood transformation projects that do both, while directly addressing the immediate social and spatial needs that residents actually prioritise. Similarly, León's *Refugio Climático* and Naucalpan's *Parque Revolución* pilot combined climate adaptation measures with improvements to public spaces, addressing immediate community needs. Designing around, rather than within, the mitigation/adaptation boundary may be one of the most consequential methodological shifts that urban climate practice still needs to make.

The work is unfinished and it would be dishonest to suggest otherwise. Political volatility has fragmented coalitions, weakened institutional counterparts and repeatedly threatened to push climate off urban agendas just as it was gaining traction. The tension between the urgency of the climate crisis and the slow, relational work of building trust in communities that have every reason to be sceptical is real and does not resolve neatly. The urban labs project has developed institutional models, evidence bases, methodologies, trained actors and communities that have experienced what it feels like to shape the decisions that affect them. The question now is whether the institutions, funders and policymakers working on urban climate action are willing to build on it.

Related reading

Walnycki, A and Landesman, T (2024) Connecting decarbonization and social justice in cities. *Environment & Urbanization* 36(1) 3–12.

Walnycki, A, Bahadur, A and Landesman, T (2022) Better cities are possible: responding to the twin crises of climate change and inequality. IIED, London. www.iied.org/21006iied.

IIED, Frontrunner cities: connecting climate action and social justice, www.iied.org/collection/frontrunner-cities-connecting-climate-action-social-justice.

Moretti, JA (2024) Coalitions that transform territories: mitigation from a new perspective. IIED, London. www.iied.org/21706iied.

Almansi, F, del Valle, J, Costello, M and Hardoy, J (2024) Climate justice in informal settlements in Buenos Aires. IIED, London. www.iied.org/22590iied.

Shand, W, Mardon, M, Schoonman, N, Koyaro, M, Njoroge, N, Raido, M, Banana, E, Nyamangara, TA and Muganyi, S (2026) Heat impacts on informal settlements: participatory heat data collection in Kenya, Tanzania and Zimbabwe. IIED, London. www.iied.org/22697iied.

Shand, W, Raido, M and Mardon, M (2025) Overheating cities: lessons from informal settlements in Dar es Salaam. IIED, London. www.iied.org/22664iied.

Notes

1 Hardoy, J, Motta, JM, Kozak D, Almansi, F, Reverter, T and Costello M (2022) Exploring the links between the use of NbS, mindshifts and transformative urban coalitions to promote climate resilience within an ongoing reurbanization process: the case of Villa 20, Buenos Aires. *Frontiers in Sustainable Cities* 4. doi:10.3389/frsc.2022.962168.

2 Hardoy, J, Guerra, F, Kozak, D, Almansi, F and Sandholz, S (2026) Case study – Villa 20, Buenos Aires: co-creating data and knowledge to drive transformation and climate justice in informal settlements. Columbia University Libraries. doi:10.7916/s14x-9r50.

3 Bulkeley, H, Edwards, GA and Fuller, S (2014) Contesting climate justice in the city: examining politics and practice in urban climate change experiments, *Global Environmental Change*, 25, pp.31–40.

4 Walnycki, A and Landesman, T (2024) Connecting decarbonization and social justice in cities, E*nvironment & Urbanization*, 36(1), pp.3–12.

5 The TUC programme works with cities across Latin America to shift the social, political and institutional structures to drive just urban transformations. Operating through urban labs in five cities in Mexico, Brazil and Argentina from 2021 to 2027, TUC brings together residents, civil society, government and academia to co-produce strategies that respond to local needs while driving down carbon emissions. See: Turmena, L, Guerra, F, Ramírez Agudelo, NA, Ramos Galvez, A, Sandholz, S, Dias de Freitas, A, Nespras, J, Magallán, MR, Menezes, M, González Barbosa, S, Hardoy, J, Almansi, F, Blackwell, C, Lazo, P, Samios, A, Alberti, C, Freire, I, Silva, K, Oliveira, L, Azeredo, L, Oliveira, M, Campos, M, Enríquez, AI, Villasís, A, Pozos, O, Gallegos, A, Zubicaray, G, Roll, M and Landesman, T (2026) Weaving urban futures: trajectories towards just and climate-resilient cities. United Nations University Institute for Environment and Human Security (UNU-EHS), Bonn. doi:10.53324/AGWL7019

6 TUC (2025) Tools to weave urban futures. United Nations University Institute for Environment and Human Security (UNU-EHS), Bonn.

7 See: Masimba, G (2026) Examining climate resilience hubs as mechanisms for fostering locally led informal climate change governance, *Urbanisation*, 11(1), pp.185–199.

8 Shand, W, Mardon, M, Schoonman, N, Koyaro, M, Njoroge, N, Raido, M, Banana, E, Nyamangara,

T and Muganyi, S (2026) Heat impacts on informal settlements: participatory heat data collection in Kenya, Tanzania and Zimbabwe. IIED, London. www.iied.org/22697iied

9 For more on how the urban labs were established, see: Roll, M, Almansi, F, Hardoy, J, Gatti, S, Samios, A, Turmena, L, Campos, M and Zubicaray, G (2024) Urban labs beyond Europe: the formation and contextualization of experimental climate governance in five Latin American cities', *Environment & Urbanization*, 36(1), pp. 173–194. doi: 10.1177/09562478241230462.

10 Guerra, F, Roy, S, Muñoz Rosas, L and Sandholz, S (2025) Mindset shifts and sustainability transformation journeys across urban labs in Latin America, *Urban Transformations*, 7(1), p.10. doi:10.1186/s42854-025-00078-6.

11 Inspired by Nisnovich, J (1994) *Manual práctico de construcción* (Practical construction manual), also known as *Manual del hornero*, the manual for climate adaptation in low-income neighbourhood seeks to share ideas for addressing some of the climate effects that often affect low-income neighbourhoods, such as heat waves and flooding, in an educational manner and through drawings, plans and photos. It is designed for self-builders who want to improve their homes and the common spaces in their neighbourhoods with materials and construction techniques typical of central Argentina. IIED-AL (2025) Manual para la adaptación climática de barrios populares: ideas gestionadas por la comunidad para mejorar el espacio público y la vivienda autoconstruída frente al cambio climático (Manual for climate adaptation in low-income neighbourhoods: community-managed ideas for improving public spaces and self-built housing in the face of climate change).

12 Launched in 2024 under Brazil's Ministry of Cities and coordinated through its National Secretariat for Peripheries, *Periferia Viva* is a federal programme aimed at improving living conditions in Brazil's favelas and vulnerable urban peripheries. Its first funding cycle alone channelled more than US$1 billion into integrated upgrading works — spanning infrastructure and sanitation, housing, environmental and land-tenure measures, and disaster-risk prevention — across 58 territories in 48 cities and 21 states. See Ministério das Cidades. Periferia Viva - urbanização de favelas. www.gov.br/cidades/pt-br/novo-pac-selecoes-2025/periferia-viva-urbanizacao-de-favelas; and WRI, Upgrading informal settlements in Brazil's urban periphery, www.wri.org/initiatives/upgrading-informal-settlements-brazils-urban-periphery.

13 Guerra, F, Romero Magallán, M, Adame, A, Zubicaray, G, Roll, M and Turmena, L (2022) TUC city profiles no. 3: Naucalpan, Mexico. United Nations University Institute for Environment and Human Security (UNU-EHS), Bonn.

14 Guerra, F, Caldera-Ortega, A, Tagle Zamora, D, Zubicaray, G, Adame, A, Roll, M and Turmena, L (2022) TUC city profiles no. 2: León, Mexico. United Nations University Institute for Environment and Human Security (UNU-EHS), Bonn.

15 The Naucalpan urban lab used *Parque Revolución* as its proving ground, as residents, planners and civil society came together to co-design the square's revitalisation.

16 Turmena, L, Lusieux, A, Sandholz, S, Guerra, F and Roll, M (2022) TUC city profiles no. 4: Recife. United Nations University Institute for Environment and Human Security (UNU-EHS), Bonn.

17 Turmena, L, Maia, F, Guerra, F and Roll, M (2022) TUC city profiles no. 5: Teresina, Brazil. United Nations University Institute for Environment and Human Security (UNU-EHS), Bonn.

18 Throughout this section, 'alliance' refers to the multisectoral coalitions operating in each territory. This reflects the names adopted by the local groups, the *Aliança pelo Centro do Recife* (Alliance for the Centre of Recife) and the *Aliança pelo Residencial Edgar Gayoso* (Alliance for Residencial Edgar Gayoso).

19 Recife City Hall, Waycarbon, Development Bank of Latin America (CAF) and ICLEI South America (2019) Climate Risk and vulnerability analysis of the municipality of Recife.

20 UN-Habitat, Uchoa, G and Al Youssef, S (2022) Recommendations of actions for resilience and sustainability: Teresina. City Resilience Global Programme. https://urbanresiliencehub.org/wp-content/uploads/2022/11/executive-summary-teresina.pdf

21 Instituto Nacional de Meteorologia, Normais climatológicas do Brasil, 1981–2010 (Climatological normals of Brazil 1981–2010) Teresina Aeroporto station (82579), https://portal.inmet.gov.br/normais

22 Author's calculations for automatic weather station A312 Teresina, hourly records 2008–2023 (years with ≥90% coverage), based on data from: Instituto Nacional de Meteorologia, Dados históricos anuais (Historical annual data), https://portal.inmet.gov.br/dadoshistoricos

23 TUC (2023) Pesquisa comunitária Residencial Edgar Gayoso. Teresina - PI (community survey at Residencial Edgar Gayoso). https://collections.unu.edu/view/UNU%3A10338.html

24 For further details on Recife's governance model, see: TUC (2025) Governance model: Recife, Pernambuco. https://urbancoalitions.org/sites/default/files/publications/files/Relat%C3%B3rio%20de%20Governan%C3%A7a_V05_ENG.pdf

25 Private sector participation varied across the labs, from sustained membership to ad hoc, in-kind support.

In Teresina, the sustainability microenterprise Garagem Orgânica and the water utility Águas de Teresina took part in the alliance's formation and planning meetings in 2022. Garagem Orgânica later withdrew, while Águas de Teresina supported the community *mutirões* with educational and play activities for children through its corporate social responsibility programme. From 2023, the composting company É de Sol and the recycling cooperative Coopcata 3Rs joined as alliance members and were contracted to deliver joint training on composting and recycling. É de Sol's representative also contributed to alliance initiatives beyond waste. Other local businesses donated food and supplies to the *mutirões*. In Recife, CESAR, a private higher education institution in the Porto Digital innovation ecosystem, is an alliance member. Its proximity to Comunidade do Pilar has led to several initiatives on social issues and technology, some in partnership with the city government. In León, local companies provided materials, plants and training sessions to two of the demonstration pilots. In Buenos Aires, the construction firm involved in the reurbanisation of Villa 20 supported interventions with tools, occasional materials and storage space, but did not take part in urban lab meetings.

26 The *Periferia Viva* Network is a national community of practice aimed at strengthening informal-settlement upgrading processes in 48 territories across Brazil selected under the Ministry of Cities' *Periferia Viva* Programme.

27 See: Guerra, F, Merlinsky, G, Hardoy, J, Kozak, D, Roll, M, Tobías, M and Pereira, P (2022) TUC City Profile No. 1: Buenos Aires, Argentina. United Nations University Institute for Environment and Human Security (UNU-EHS), Bonn.

28 Municipalidad de Rosario (2024) *Mapas de riesgo climático Rosario 2024* (Climate risk maps Rosario 2024). www.rosario.gob.ar/inicio/mapas-de-riesgo-climatico-rosario-2024

29 Information shared by Servicio Publico de la Vivienda y Hábitat (SPVyH), Municipality of Rosario.

30 Alva Torres, DE, Arévalos, ML, Bolloqui, S, Burin, D, Durruty, ZD, Herrera, PM, Mejía, O, Nahon, A, Peña, D and Segovia, H (2023) Construyendo la memoria ambiental de la Villa 20: proceso de mapeo colaborativo, *Medio Ambiente y Urbanización*, 98/99, pp.167–186.

31 IVC = *Instituto de Vivienda de la Ciudad*, the housing institute of the city of Buenos Aires.

32 MGP = *mesa de gestión participativa*, or participatory management committee. Established by Law 5705/2016 of the City of Buenos Aires, which provided the legal support to the participatory process, it is a deliberative space to plan, discuss and negotiate the reurbanisation plan for Barrio 20, comprising community leaders from different political fronts, IVC teams, the city ombudsman, professionals and civil society representatives.

Low-income communities, who are most exposed to climate risk and have the lowest carbon footprints, are routinely excluded from processes meant to address climate challenges. Drawing on five urban labs in Argentina, Brazil and Mexico, this paper shows that low-income settlements are not only sites of vulnerability but also essential sites of climate action. Through co-production, quick-win pilots and nature-based solutions, the labs shaped master plans, a national upgrading programme and a ministry-run heat monitoring. The lesson: urban climate action often hits governance problems before hitting technical problems. To resolve this, the institutions, funders and policymakers working on urban climate action must ensure the legitimacy of low-income and vulnerable settlements before trying to to scale climate action projects; and where basic needs go unmet, delivering mitigation initiatives alongside adaptation measures can support transformative climate action.

IIED is an international policy and research organisation working with partners globally to build a fairer, more sustainable world. Together, we challenge the destructive economic models, unjust power dynamics, entrenched mindsets and protectionist laws that perpetuate poverty, suppress rights and hinder progress towards a thriving world. We explore solutions to complex economic, social and environmental crises, using research, action and influencing to tackle the root causes of climate change, nature loss and inequality.

International Institute for Environment and Development
44 Southampton Buildings, London WC2A 1AP, UK
Tel: +44 (0)20 3463 7399
www.iied.org

Knowledge Products

This output forms part of the Transformative Urban Coalitions (TUC) project, funded by the International Climate Initiative (IKI) of the German Federal Government.

Supported by:

Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety

IKI INTERNATIONAL CLIMATE INITIATIVE

based on a decision of the German Bundestag