Transformative Urban Coalitions

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Phase I Global Visioning Report

September 2022

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Contents

Introduction

Global Vision

The *Transformative Urban Coalitions: Catalysing Urban Partnerships to Drive Systemic Transformation Towards Sustainability* (TUC) project seeks to shift the sustainability trajectory of cities towards zero carbon emissions by altering the deeper social, technological, and political structures and systems that are currently reinforcing high-carbon, resource-intensive urbanization.

The project recognizes that decarbonisation efforts can lead to unjust consequences for marginalized peoples. Such inequalities will not just affect the well-being of many individuals, but also limit the possibility of reaching global climate and sustainable development goals within the limited remaining time.

Thus, TUC focuses particularly on social innovation and transformative governance to trigger fundamental change from local projects in participatory and inclusive processes. Promoting these processes follows the recognition that scaling down global agendas such as the Paris Agreement or the SDGs and dissemination of scientific evidence in current, often top-down formats have not been successful enough so far. By fostering new social dynamics and new urban coalitions for urban sustainability transformations, TUC will contribute to creating socially inclusive zero carbon cities by 2050. The project will integrate coalition-building, research, art and film, and capacity development to reach deep, cross-sectoral, systemic, and socially inclusive transformation, leading to decarbonization that simultaneously addresses calls for climate justice.

The focus of the project is on Latin American cities, where current patterns of urban development combine growing consumption with inequalities and exclusion, thereby exemplifying broader global trends that require transformative change. In each city, an urban lab will be established to develop innovative solutions by emphasizing co-creation and joint learning, and by following user-centered approaches to change cities in more participatory ways, hence creating more ownership over proposed solutions. Findings derived from and

across these five pilot cities in Argentina, Brazil and Mexico will be scaled to other cities and countries.

Through this work, the programme seeks to shift the dominant model of decarbonization from a technical-engineering endeavour to one that also acknowledges and grapples with the social, political, and informational complexities of deep transformation.[i]

The purpose of this document is to present the cohesive global vision of the TUC Project, establishing theoretical groundings, the shape and scope of activities of the project, and the long-term objectives of the project's interventions in each pilot city and globally.

Figure 1: Community intervention by the Urban Lab in Recife. Photo by Adriana Preta/WRI Brasil.

Setting the scene: cities, climate change, and inequality

More than half of the world's population currently resides in cities, and urban populations are only growing. By 2050, that number is expected to reach 60% or higher.[ii] The most recent IPCC report, released in 2022, emphasized that many of the key risks of climate change are concentrated in cities, especially on already marginalized and vulnerable populations. Those living in urban areas are acutely vulnerable to heat waves, flooding, drought, extreme weather events, and other impacts of climate change.[iii] Simultaneously, cities contribute significantly to global carbon emissions: urban areas account for between 71% and 76% of CO2 emissions from energy use alone.[iv]

These changes are happening concurrently with a rise in global inequality: in much of the Global South, especially parts of Asia and Africa, rapid urbanization is occurring without equivalent economic growth, shifting poverty to cities and deepening inequality.[v] This urbanization and its corresponding inequalities are projected to grow in the coming years and decades, especially as climate change drives rural-to-

urban migration. Thus, successful global climate change adaptation requires decarbonization of urban areas while addressing the deep inequalities brought on by intensive urbanization.[vi]

Latin American cities are no exception; they exemplify many of these broader global trends that require transformative change. With 79% of its population living in urban areas, it is the second most urbanized region on the planet.[vii] While Latin America and the Caribbean only account for less than 10% of global emissions, cities in the region are responsible for over 60% of the GHG emissions at a country level.[viii] The current patterns of urbanization in Latin America combine growing consumption with exclusion, exacerbating existing inequalities and widening wealth and opportunity gaps. This inequality in the access to urban opportunities is not a consequence of poverty, but one of the main drivers of urban poverty itself.[ix]

COVID-19 has also exposed deep vulnerabilities in most countries in Latin America. In Mexico for example, the pandemic caused a historic drop in GDP, millions have fallen into poverty, especially in urban areas, and inequality has deepened.[x] In Argentina, during the first half of 2020, poverty levels reached 40.9% of the population and between 2019 and 2020, 2.5 million people fell below the poverty line.[xi] While some relief has been given, it has not addressed the need for increased equity and decarbonization as a resilience-building strategy. In Brazil, for example, the government approved US$224 billion in fiscal stimulus by February 2021. However, the investment was not in decarbonization, climate finance, or resilience-building. Recent devastating landslides and flooding in Recife and Jaboatao de Guararapes demonstrated the cumulative impacts of climate change and inequality and the lagging government response to climate impacts.[xii] As urban areas rebuild their health and economic systems, there must be a focus on transforming systems to decarbonize, address inequality, and protect the most vulnerable to climate change impacts.

Across Latin America, the intersection of climate change and inequality issues manifests in every aspect of life, including air quality, transportation, accessible housing and informal settlements, the gender gap, and healthcare. Given the complexity of each city context, there is a need to create new forms of collaboration, where decarbonization solutions are co-produced by local actors to enable

transformation at a local scale, without disregarding broader contexts. The IKI-TUC project is testing new governance models that promote horizontal decision-making processes among actors from the public sector, private sector, civil society, and academia, to overcome political cycles and power asymmetries. In a context where mitigation programs and funds are often channeled only to national governments, IKI-TUC builds collaboration directly between governments and communities across scales, recognizing the importance of local, national, and international actors coming together.

The TUC project is building a process that bridges the gaps between these stakeholders and their diverse economic, social, and environmental agendas to enable systemic change. TUC thus works through five urban labs to create and/or support transformative actor coalitions and local initiatives across Latin America. The implementing organizations approach TUC as a process-project in each of the five cities; it relies on a *coalition-building process* aimed at shifting mindsets and governance patterns and is centered on the co-design of a *catalyst project* and related interventions that reduce emissions and tackle justice issues. TUC envisions and enables the materialization of urban futures where cross-sectoral coalitions drive

Figure 2: Barrio 20, an informal settlement in Buenos Aires. Photo by Urban Lab Barrio 20.

the transformation toward zero-carbon, equitable cities for all, both within and beyond Latin America. The long-term legacy of the TUC project is to embed these processes into formal institutions and to enable upscaling of this project-process.

Theoretical underpinnings

Governance

According to UN-HABITAT, urban governance "is the sum of the many ways individuals and institutions, public and private, plan and manage the common affairs of the city. It is a continuing process through which conflicting or diverse interests may be accommodated and cooperative action can be taken. It includes formal institutions as well as informal arrangements and the social capital of citizens"[xiii] and it considers actors at multiple levels of governance.

For rapid and systemic transformative change towards urban sustainability, new governance approaches are necessary. Technocratic approaches and traditional forms of government have turned out to be insufficient for this. Research indicates that three governance shifts are necessary to develop approaches that are more adequate to deal with the challenge:

1. From government-only approaches to more inclusive, participatory, and collaborative governance approaches that bring together stakeholders from government, civil society, and the private sector;
2. From sectoral or siloed governance approaches to more transversal, integrated approaches within and beyond government that also take multi-level governance into account;
3. From top-down hierarchical approaches to governance approaches that are more experimental in collaboration with bottom-up initiatives and that build on the resulting evidence and common learning.

IKI-TUC supports the introduction and expansion of this approach to transformative urban sustainability governance in three ways. First, by setting up Urban Labs in five cities together with local governments and stakeholders, it creates micro-versions of this more inclusive, integrated, and experimental transformative governance approach for urban sustainability. Within these Urban Labs and by working on their catalyst projects, the participants learn and demonstrate what this new governance approach can achieve

and what its challenges and limitations are.

The second method is through transformative coalitions. Stakeholders will be supported to build on their experiences in the Urban Labs to form formal or informal coalitions to further promote either the introduction of Urban Labs elsewhere, or the integration of these governance principles of inclusivity, integration, and experimentation into governance processes more generally. This broader impact beyond the original Urban Labs can turn these groups into transformative coalitions.

Third, an important part of IKI-TUC is data collection and research on the growth and work of the Urban Labs. Together with the lived experiences and lessons learned by Urban Lab members, this evidence will be used to demonstrate the potential of this example of a new governance approach to address the challenges of transformative change towards urban sustainability more effectively. This will be done through research publications, training programs, presentations, films, and communication at local, national, and international levels.

Decarbonization and climate justice

Decarbonizing does not automatically include reducing the inequality gap: many efforts to reduce emissions can lead to the concentration of resources on the privileged or to (perceived) limitation of options to more vulnerable groups. It is therefore important to build decarbonization solutions that emphasize climate justice. Climate justice calls for particular attention to how rights and responsibilities are distributed and the need for meaningful participatory processes in climate-related decision making. Climate justice asserts that without equity, decarbonization initiatives are not able to sustain their impacts or bring about substantial structural change.[xiv] Indeed, research has shown that climate mitigation and adaptation projects that are internationally funded and designed to comply only with international commitments can widen

inequalities and create new vulnerabilities for the poor and other excluded populations.[xv]

Given the importance of climate justice in the IKI-TUC project, there are four guiding principles that the project keeps at its core regarding social justice, decarbonization, and climate:

Figure 3: The Urban Lab in Teresina. Photo by Paulo Sérgio/WRI Brasil.

1. Mitigation of unintended negative social impacts of climate action,
2. Social justice as an integral component of decarbonization,
3. Decarbonization as a means of advancing social justice, and
4. Climate mitigation and adaptation as urban development goals coupled with social justice.

Each of these tenets shapes the course of the IKI-TUC project in both process and outcomes. Decarbonization as an end in itself as well as a means of advancing climate justice calls for breaking from existing path dependencies – in other words, for broader sustainability transformation.

The importance of transformation

Transformation refers to multi-dimensional change processes that break with existing path dependencies. It is therefore regarded as systemic and disruptive. It can be described as actions that have the reach to shift existing systems, including their structures, institutions, and actor positions onto alternative trajectories.[xvi] The term "urban transformation" has often been co-opted by political partisanship, leading to ambiguity about its

meaning. Real world examples of transformative change in practice should comply with three dimensions:

1. Reach of impact: positive impacts of an urban intervention are felt across scales and over time
2. Balance of impact: positive impacts across social, environmental, and economic realms
3. Catalytic nature: the intervention aims at addressing the root cause of problems while triggering and enabling change on a broader scale.[xvii]

Figure 4: Systems/levels of transformation. Figure from TUC Summary Presentation, 2021.

While 'transition' continues to be the preferred term in socio-technical system studies, 'transformation' is adopted in more diverse fields, thus enabling dialogue across a range of disciplines.[xviii] TUC emphasizes the potential of transformative change to contribute towards advancing social and environmental justice, redistributing opportunities, empowering marginalized groups, and deepening representation in decarbonization discourses.[xix] Urban sustainability transformation (UST) therefore indicates not only physical transformation, but a change of mindsets in citizens and institutional cultures as well as a transversal way of working with coalitions across silos. TUC is contributing to advancing UST frameworks by means of desk studies and transformative research in the urban labs.

Changing mindsets and overcoming inertia

In addition to shifting patterns of governance and system transformation, another key component of the TUC is to promote mindset shifts at different levels, including individual, organizational, city-wide, and nationally. When considering mindsets, TUC focuses on the individual mindsets of Urban Lab (UL)-specific actor coalitions. The actors were chosen for the UL because they represent relevant organizations, as TUC aims for the

wider institutionalization of successful processes and results.

Thus, the project will also track organizational culture – the changing narratives present in the organizations that these individuals represent. Since organizational culture – communicated through norms, policies, practices and leadership messages – influences individual mindsets, it is valid to assume that the opposite can also happen.[xx] Thus, an individual's interactions with and position within an organization and/or community can shape both the individual's and the organization or community's mindsets and behavior. This can also be true at the scale of larger (urban) systems and can ultimately lead to shifts in narratives and paradigms.[xxi] Rather than just researching what individuals' mindsets are and how these hinder or enable transformative climate action in cities, we also want to understand where mindsets come from – that is, how they initially develop – and how they can be changed. This can only be done by looking at the broader systems in which they are embedded in as well as the associated narratives.

We hypothesize that mindsets that enable UST reflect:

1. A holistic view of sustainability (i.e. cross-sectoral/systemic perspectives, acknowledgement that decarbonization strategies can contribute to urban development and social justice goals),
2. Openness and support for transformation, positive attitudes, and ambition toward zero carbon strategies and a departure from business-as-usual thinking
3. Buy-in for collaborative and inclusive governance approaches.

This third point involves recognition of marginalized voices, sustained participation in decision-making and projects, alternative ways of creating and sharing knowledge, and attention to vulnerabilities linked to social markers such as race, gender, etc., among others. There is also an inductive component to this project which will allow TUC to refine these hypotheses regarding what comprises barrier and enabling mindsets for transformative change in specific city contexts.[xxii]

Local governments may lack the technical awareness, incentives, resources, capacities or policy mandates to pursue a decarbonization path, and rigid bureaucracies can undermine trust. To fight the climate emergency in an equitable way and to achieve long-lasting sustained results,

Urban Lab: Barrio 20 Case Study

Barrio 20 is an informal settlement within the city of Buenos Aires dating from the 1940s. Today it is undergoing an integral upgrading process, where a strong participatory process cross – cuts and structures all decisions and interventions. It is an opportunity to switch to a more sustainable development pathway and contribute to systemic urban change.

Catalyst project:

Integration of 'greening' and decarbonization dimensions in informal settlement participatory upgrading processes in Buenos Aires, aiming for more sustainable and equitable urban futures.

Approach:

Co-creation: Support a coalition of local stakeholders to integrate low-carbon, sustainable initiatives into existing participatory planning processes.

Informal settlement upgrading: Zero carbon and sustainable development must be embedded in all actions undertaken; therefore the catalytic project will focus on the ongoing upgrading process in Barrio 20, introducing greening and decarbonization intervention options for public and communal spaces.

Implementation at the core: Build on an ongoing participatory upgrading process in Barrio 20 to ensure mindset shifts that promote transformative change to more inclusive, sustainable, and just cities.

collaborative endeavors between local, regional, and national governments, private sector, academia, civil society, grassroots organizations, and other actors such as artists are needed. Many individuals and organizations favor known and tested practices instead of innovative approaches which can entail varying degrees of uncertainty and risk but may be less carbon intensive. For some actors, including many communities, not collaborating is often perceived as far easier and pursuant to faster results.

This is, however, not always the case. Shifting mindsets alongside a broader shift toward more integrated and experimental governance practices can foster more legitimate, rapid, and effective transformative change by helping to overcome political inertia, minimize backsliding, and create bridges across time, political cycles, sectors and leaders.

The TUC Process – Key Components

Urban Labs

'Urban Lab' is an umbrella term for a group of approaches that aim at collaborative learning of a variety of stakeholders while co-creating innovative solutions for urban problems. The urban lab approach is

participatory, cross-sectoral, inclusive, and supported by transformative research. It is both process and project and includes both enduring coalition-building and small-scale experimental, real-life (catalyst) projects and initiatives[xxiii]. A key purpose of these projects and initiatives is to provide lessons that can be applied for larger-scale transformation processes.[xxiv] In keeping with the emphasis on climate justice and transformation, urban labs are one of the central coalition-building tools that the TUC project uses to develop decarbonization strategies. These Urban Labs are test beds for accelerating change from different sectors under different conditions.[xxv] So far, urban labs have mostly been implemented in European contexts, with a few exceptions. TUC is adapting this format to Latin American cities through an innovative and promising approach to local contexts.

Urban labs have several benefits. Due to the diversity of stakeholders involved, solutions generated by labs tend to be effective and long-lasting, goals of the coalition are often balanced across different interests and integrated into city planning, and the resulting processes and solutions are legitimized by the involvement of key stakeholders. In addition, the collaborative and inclusive process of a well-designed urban lab can build trust between actors that are

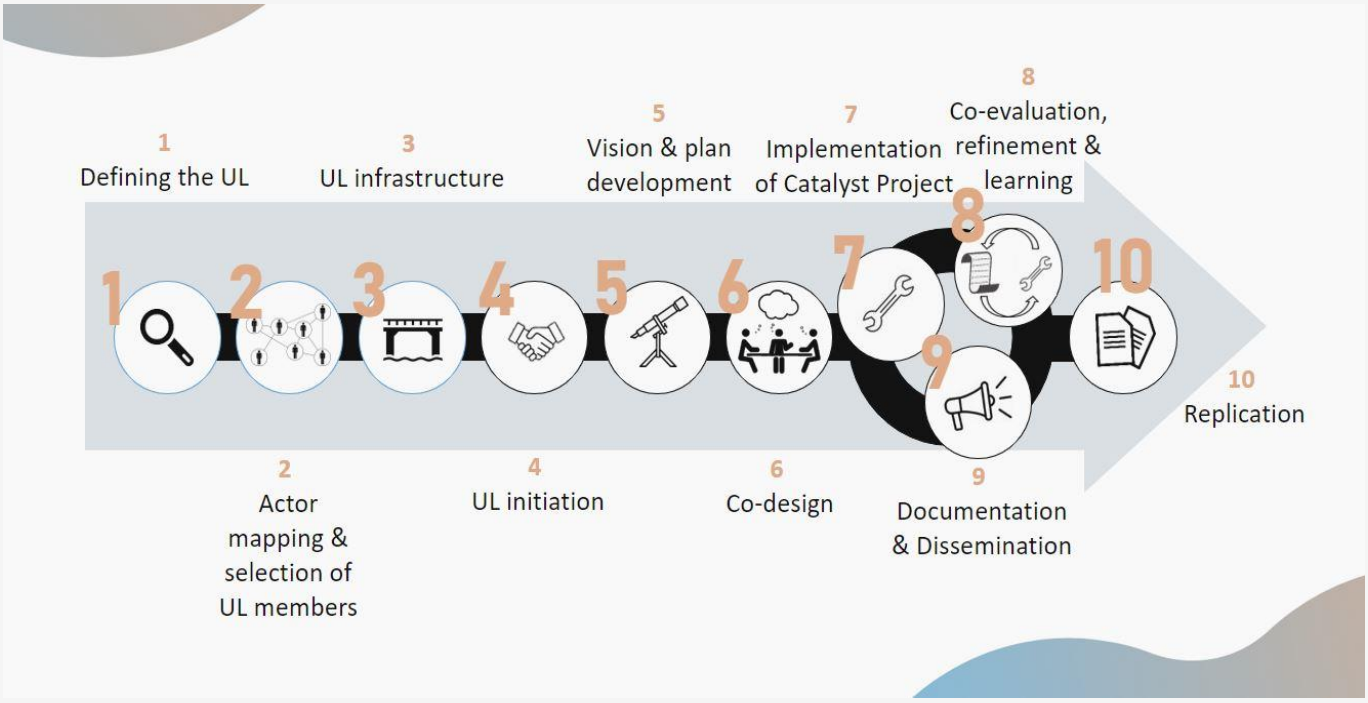

Figure 7: Steps and sequence of the Urban Labs. Figure from ***TUC Summary Presentation, 2021.***

normally siloed, create an innovation ecosystem that extends beyond the core project, improve capacity development for its actors, and empower marginalized and disadvantaged communities. One of the main advantages of the urban lab approach is that it is a coherent approach that is nevertheless highly flexible, iterative and can and should be adapted to the respective local context.[xxvi]

Urban Labs in Latin America have a more recent history than in Europe. The first one to be implemented in the region was the 'Laboratorio de la Ciudad' in Mexico City, which operated from 2013 to 2018. In general, urban labs in Latin American countries are initiated by local governments and serve as innovation departments to create new solutions to public challenges and build partnerships with academia, private sector and less frequently with NGOs or other civil society organizations. The incipient innovation culture in public administration, the lack of political buy-in and the shortage of resources invested in such labs still limit the reach of urban lab actions in the region. Also, many labs have difficulties to go beyond the stages of ideation and designing to actually implement prototypes and conduct experiments in the city. In Latin America, it is common to find urban

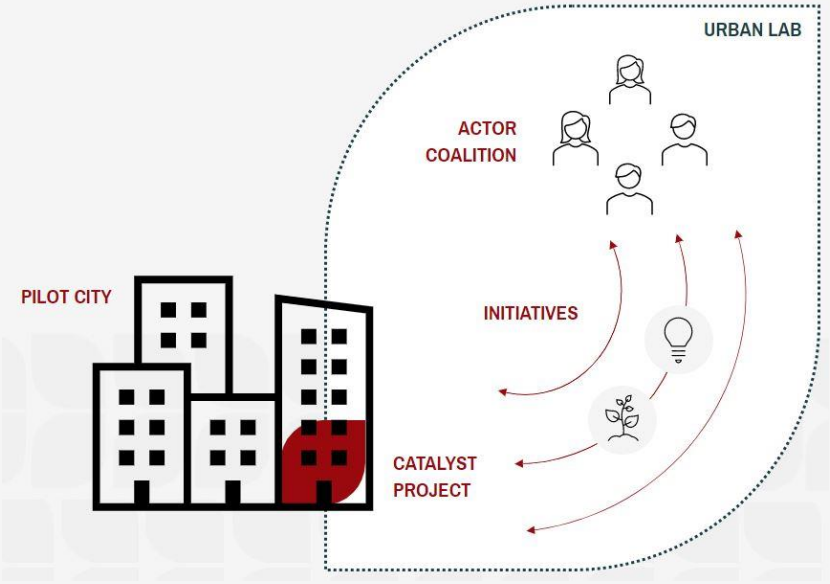

Figure 5: The Urban Lab's relationship to the city. Figure from TUC Survey COP27 Presentation, 2022.

labs that are not necessarily focused on introduction of new technology, but rather seek to facilitate exchanges among multiple stakeholders, build capacities, enhance administrative processes, create new mechanisms for citizen participation or articulate existing projects.

The political backing and support from the administration as well as its participation in the urban lab meetings are important. The initial goal of this structure is to connect actors from civil society, private industry, government, community, and other sectors to facilitate both the identification of needs and the solutions to them. The broader goal is to contribute to a more collaborative style of governance, a more integrated perspective,

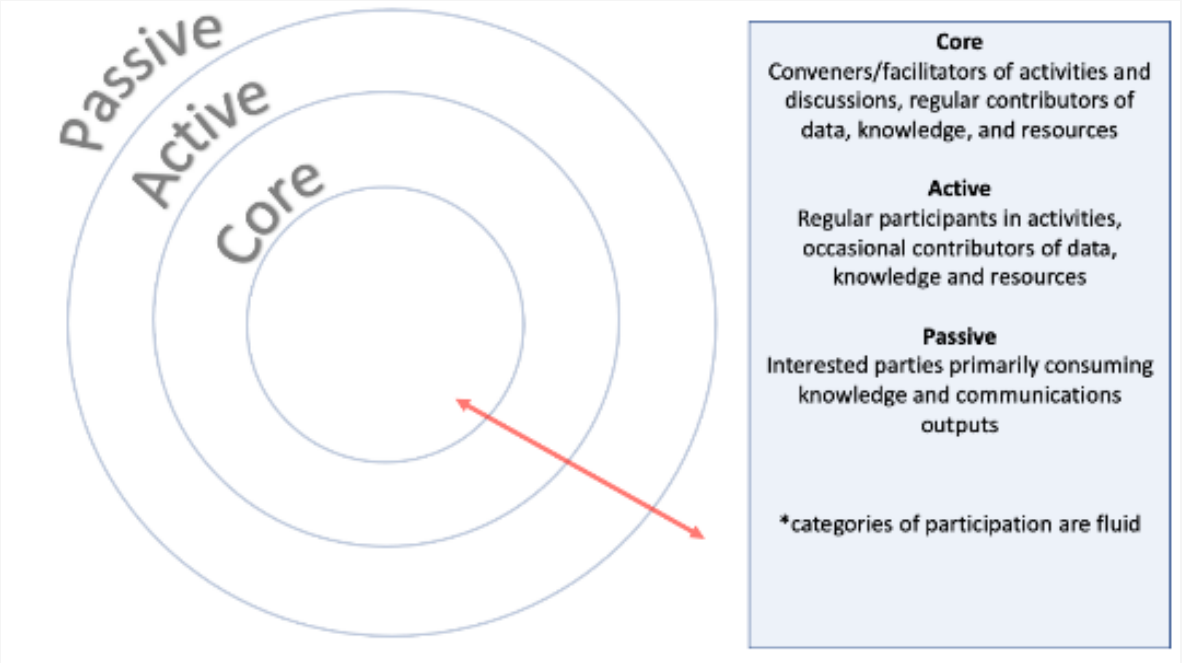

Figure 6: Community of Transformation Structure. Figure from CoT Concept Note Final, 2021.

changed mindsets, and, eventually, urban sustainability transformations that include decarbonization and lead to zero-carbon, just and inclusive cities by 2050 or earlier.

Community of Transformation

The Community of Transformation (CoT) is an initiative within IKI-TUC that focuses on collaboration not only among city actors, but across cities and initiative partners. Exchanges between recipients of development aid (South-South cooperation, or SSC) can decenter North-South power hierarchies in international development projects and recognize the value of knowledge-sharing and capacity development among experts, institutions and civil society within the Global South. Similarly, city-to-city partnerships and horizontal exchanges can strengthen and extend locally produced knowledge and create networks of solidarity between actors with shared agendas.[xxvii] In the first phase, the CoT is thus designed to provide knowledge-sharing and capacity development across pilot cities and consortium members.

Rather than replicating the structure or activities of the Urban Labs, the CoT provides opportunities for members of the Urban Labs, project partners, other stakeholders, and experts to discuss decarbonization and aspects of urban sustainability transformation from different geographies and perspectives.[xxviii] At the core of the CoT are all the TUC consortium partners, responsible for

convening and facilitating discussions and contributing data, knowledge, and resources. As the project progresses, the CoT will broaden to include opportunities for members of the Urban Labs and stakeholders identified in the actor-constellations at the local, national and regional levels to participate. These categories are not static, an participants will often be found in core/active/passive roles depending on the relevant discussion or activity. The structure of the Community of Transformation is designed to facilitate information sharing first among core participants, and gradually expand throughout Phases I and II to include dissemination of information and scaling up of projects.

In short, the CoT is designed to facilitate learning and exchange across the consortium and the urban labs. The consortium members will pilot the CoT during its initial stages, then transfer the focus of the CoT to cross-country collaboration between urban lab actors. The CoT provides a space for:

1. Cross-city communication to develop common definitions and a common understanding of sustainable urban transformations
2. Sharing of strengths and expertise across partner organizations and urban labs
3. Connection both across actor constellations and urban labs as well as to broader global networks and debates

The TUC Community of Transformation is actively focused on supporting transformative change through specific community, policy, and material processes. Borrowing from the field of education, we may define CoTs as communities "that create and foster innovative spaces that envision and embody a new paradigm of practice."[lxxix]

Transformative research

Research is an essential part of TUC's mission to enable urban sustainability transformation. First, it generates input and feedback on project processes and outcomes that allow the project to adapt to local contexts as it progresses. Secondly, participatory research is an important aspect of co-learning and empowering stakeholders. Finally, research can be disseminated and shared outside of the pilot cities themselves, expanding global knowledge about just decarbonization. It is thus a necessary element of any evidence-based upscaling activity.

Three different types of research are envisioned in the context of the project. The first, transformation research, assesses outcomes and impact of project interventions, both intended and unintended. These include project-related research and monitoring and evaluation. Project data and indicators are designed according to the context of the project, while paying attention to the unique settings in the different urban labs. A system-level analysis is created to collect background information on each pilot city to help establish the links between project indicators and local circumstances. This allows for analysis of project success both in individual contexts and as part of a wider transformation toward urban sustainability. While most studies generally frame transformation as either a process or an outcome, TUC enables and tracks both, placing particular emphasis on decarbonization and social justice as concurrent goals.[xxx]

The second and main research stream, transformative research, will develop actionable knowledge and inform the practical decision-making and implementation of projects. This research will support and inform the work of the Urban Labs as they progress. It goes beyond participatory action research as outcomes will be fed back into the process to inform and guide further steps. Transformative

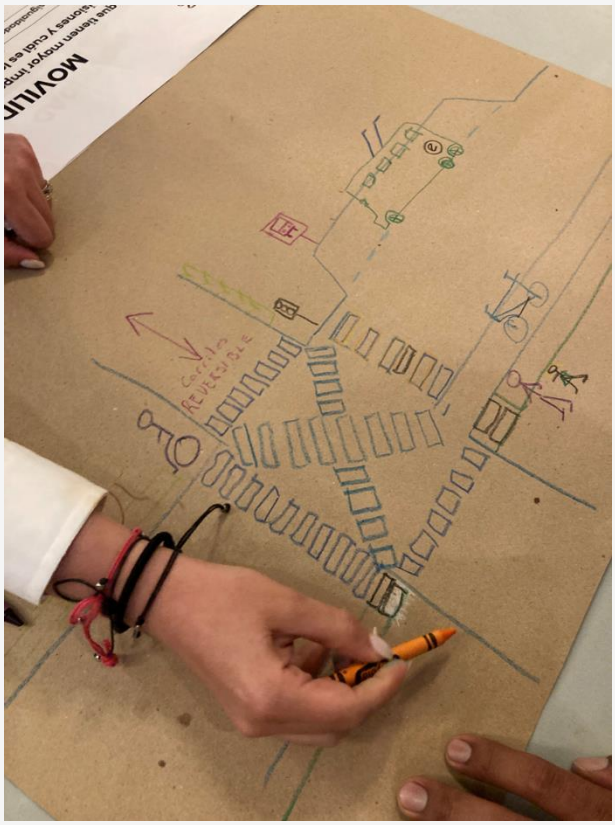

Figure 7: Urban Lab planning safer streets in Naucalpan. Photo by WRI México.

research is oriented towards concrete social problems and is characterized by an explicit claim to intervention. It does not only serve to generate "systems knowledge" (e.g., technological or resource-oriented systems analysis), but also integrates stakeholders in the process of generating "target knowledge" (visions and guiding principles) and "transformation knowledge" in concrete settings of urban or sectoral transitions towards sustainability. Research processes

and results will a) generate generalizable knowledge on future transformation pathways for zero carbon cities until 2050 and thereby b) produce knowledge and support for the other TUC work packages, that can be used by other cities.

This research will focus primarily on shifting mindsets and governance patterns. The transformation that is required for decarbonization is not only about the reduction of emissions or a technological transition, but also about the disruption of path dependencies that ultimately promoted a carbon-intensive system.[xxxi] Understanding the system will help identify and address obstacles to sustainability transformation for each city and best practices for overcoming them. Thus, the transformative research element of the project will help identify how best to disrupt these path dependencies. In addition, this research will seek to understand which kinds of governance systems and approaches create enabling environments for urban sustainability transformation, and how they can be established and broadened towards socially inclusive decarbonization.[xxxii]

Third, the TUC project will conduct academic research to contribute to broader understandings of systems change and transformative

Figure 8: Barrio 20 Urban Lab first community intervention. Photo by Urban Lab Barrio 20.

coalitions. This research will include literature reviews, ethnographic studies, political economy and ecology research, and further academic research based on data collected. The research conducted as part of the TUC project will expand academic understandings of mindset shifts, effective coalition-building, and decarbonization and social justice in cities. Together, this knowledge can build collective understanding of best practices for decarbonization and allow the TUC project to improve both research and implementation of future decarbonization programs.

Art, Communication, and Capacity Development

Recognizing the complexity of shifting governance patterns and mindsets and their relationships to emotions, imagination and deep understanding, TUC will also integrate art, communication and capacity development together with research as key parts of the transformative process.

Incorporating documentary filmmaking and artmaking into the IKI-TUC projects supports the mind-shift of urban actors in the pilot cities by raising awareness of local population and actors in pilot cities on new approaches to carbon-zero and inclusive cities. In addition, film and art have been shown to inspire political action,[xxxiii] engage citizens in science and environmental protection,[xxxiv] and contribute to the construction of new connections across a community. Art can be used as community-building and as a method to cross societal and sectoral divides, breaking down historical and political barriers.[xxxv] The art and film connected to the TUC project will contribute to inspiration, knowledge sharing and co-creation to actively involve stakeholders and catalyze change processes in the pilot and further cities in Mexico, Brazil and Argentina.

Figure 9: Creating art as part of the Urban Lab in Teresina. Photo by Paulo Sérgio/WRI Brasil.

The project will also include transformative communications, focused on both the local level and the global scale. On the local level, communication will be informed by ongoing research and urban lab activities, so that the work of the urban labs is not conducted in a vacuum but informs and is informed by the events of the wider municipality. A variety of engagement tools will be used and tested to help the Urban Labs build a dialogue with the wider community and collaboratively create shared visions. They will be part of a toolbox to support transformative urban action. On a global scale, broader campaigns will connect the work of the urban labs to international projects and facilitate exchange between global communities' perceptions of a desirable and sustainable city and the unique

circumstances of each pilot city. This communication will be essential to inspiring and promoting the scaling-up and scaling-out of project activities.

The capacity-building activities included in TUC combine transformative research with transformative education to increase the ability and capacity of stakeholders at various levels to understand urban systems. Capacity-building can provide an equal grounding and understanding to counteract inherent inequalities in participants' experience levels with urban sustainability and bring together their existing areas of expertise. Capacity-building workshops will build understanding around the multifaceted dynamics of urban sustainability transformation and how urban lab members can integrate these into their own actions. These will take place through curriculum development, courses, platforms for exchange and dialogue as well as training programs.[xxxvi]

Our starting point

The pilot cities

TUC chose to work in the Latin America region because an initial governance transition has already happened – cities are empowered within federal systems, though to different degrees. The cities that the project works with in Brazil, Mexico, and Argentina are facing a second transition – developing the capability to shift their development trajectories toward more socially and environmentally sustainable growth. The challenges they face – decarbonisation, urban sprawl, inequality, tensions between biodiversity and economic pressures – are not unique to Latin America. However, the particular ways these challenges manifest and the potential solutions to them are context-specific.

The five high-impact urban labs in three countries act as incubators for creating catalytic actor constellations to drive broader sustainability transitions in the cities and beyond. The pilot projects address several challenges related to climate change and unplanned urban development, the effects of which include severe air pollution, extreme heat events and flooding. Sustainable transport and low or zero carbon land use planning are two key interventions deployed by the pilot projects, along with energy efficient low-income housing, sustainable water management, ecosystem-based adaptation strategies (green infrastructure), investing in the green economy, skilling the underemployed in green technology jobs, enhancing

awareness, knowledge and capacity of local stakeholders for climate action, and fostering increased knowledge transfer and cooperation.

Buenos Aires

Buenos Aires is the capital of Argentina, a coastal city on the Rio de la Plata that is home to 3 million people in the city proper and 13 million in the wider metropolitan area.[xxxvii] According to data presented in the latest Climate Action Plan prepared by the Buenos Aires government, in the last sixty

Figure 10: Barrio 20, Buenos Aires. Photo by Urban Lab Barrio 20.

years the average annual mean and maximum temperatures in Buenos Aires have increased by 1° C, while the average minimum temperature has risen by 1.7° C. Increasing temperatures has been and will continue to be accompanied by increased flooding, as Buenos Aires is home to a high number of streams and tributaries leading to the Rio de la Plata.

In addition, while economic indicators are improving overall, there has been a recent expansion of the informal city, with slums and informal settlements that concentrate high rates of poverty and high levels of population growth. These are areas at high risk of flooding, with degraded soils, exposure to polluted environments, and infrastructure deficits.

The city is administratively divided into 15 communes (see Figure 1) and 48 neighborhoods with historically marked differences in socio-economic levels and socio-environmental conditions between the north and the south of the city. In 2020, it was estimated that around 230,000 people were living in slums and informal settlements in Buenos Aires, representing almost 8% of the city's population.[xxxviii] The city suffers from a significant housing deficit, especially in the southern part of the city, where the most populated informal housing settlements are located. This is compounded by vulnerability to flooding and other climate effects, as the most flood-prone areas of the city coincide with the locations of these informal settlements.

Since 2016 the city government has committed to an ambitious urban and social integration plan of

Figure 11: Arial view of Barrio 20. Photo by Urban Lab Barrio 20.

'barrios populares'. However, this plan does not necessarily incorporate best practices in terms of sustainability, such as energy efficiency, housing retrofitting, public space intervention or mobility suitable for low-income neighborhoods. These practices could allow them to leapfrog and avoid less efficient development trajectories while delivering all essential benefits of a city. Barrio 20, an informal settlement of 30,000 inhabitants (the third largest in the city), is undergoing a participatory re-urbanization process and will serve as the area of the Urban Lab.

The process so far is sustained by residents and the local government and is delivering impressive results (new housing, opening of streets and alleys, new schools, basic infrastructure, etc.) but it currently lacks a decarbonization approach. In addition, the neighborhood is in an area highly likely to be subject to strong property development pressure over the next years. On the other hand, the city of Buenos Aires has committed to becoming a resilient, inclusive, and carbon-neutral city by 2050. By integrating aspects of transformative change towards zero carbon in Barrio 20, broader impact will be triggered across the city.

León

León is the largest of the 46 municipalities that make up the state of Guanajuato, Mexico. The municipality had 1,721,215 inhabitants as of 2020, which represents 27.9% of the total population of the state of Guanajuato.[xxxix] Between the 2010 and 2020 censuses, population in León grew by 19.8%[xl]. It is currently the third most populous municipality in the country.[xli] The city is comprised of three geographic zones that

Figure 12: León, México. Photo by WRI México.

condition the occupation of the territory and present different environmental problems: the mountainous zone in the north, the urban zone in the center, and the agricultural zone in the south of the municipality.[xlii] In 2020, 6.51% of the total population was in extreme poverty, while 39.4% were in moderate poverty.[xliii] Climate change is expected to have significant impacts on the whole of Mexico, especially as heat and drought become more frequent. The average temperature of León has risen 1.1°C and is expected to increase by as much as 2°C by 2050.[xliv] In addition, 2021 saw nearly 85% of the country under dangerous drought conditions, highlighting the need to address both emissions and adaptation.[xlv]

Relatedly, air quality is an enduring concern in León. The limited accessibility of public transport options and the presence of motor vehicles, the presence of leather-related industries, and the presence of traditional brick-making factories all contribute to high PM2.5 and PM10 levels. A key opportunity to tackle emissions and improve air quality is to accelerate the shift to active mobility modes, namely walking and cycling. In 2020, 67% of León households still owned a car or a motorcycle while only 33% opted for bicycles and other non-motorized transport.[xlvi] An integrated and inclusive urban street design is required to encourage León residents to walk or cycle instead of driving. Measures must: (a) improve

public space and infrastructure, including better pedestrian traffic conditions and more kilometres of bike lanes, (b) be responsive to the specific weather conditions of the city, for example by increasing the coverage of trees in sidewalks to provide shade, and (c) take into account and tackle existing inequalities in the access to urban mobility, prioritizing areas with the highest social inequality and poverty.[xlvii]

The key barriers to a successful transition to a zero-carbon vision in Leon are the lack of trust between the civil society and the public sector and the general impression that participation spaces are coopted by private and personal interest from the non-governmental representatives. Thus, there is much to be gained by mobilizing a coalition across this public-private divide to combat these barriers. Broader citywide urban transformations can be triggered by showing the mindset shifts and clear, visible improvements in livability and health that stem from shifting transport patterns through the Urban Lab process.[xlviii]

Naucalpan

Naucalpan de Juarez is one of the most industrialized municipalities of the State of Mexico, located on the hilly northwestern edge of Mexico City. It had 834,434 residents as of 2020.[xlix] Given its proximity to Mexico City, Naucalpan has long been an advantageous location for industrial and economic development for both the region and the country. However, the urbanization of the broader municipal area has brought with it several environmental and social concerns. Water pollution of surface rivers and water bodies, inadequate waste management, bad air quality, and urban sprawl over environmentally protected areas are some of the main environmental problems that afflict the city. Moreover, socioeconomic polarization, insecurity, and road congestion are part of the day-to-day reality of life in Naucalpan.[l] These environmental and social barriers will only be exacerbated by hotter, drier weather and more extreme weather events. Already, the

Figure 13: Zona Industral Alce Blanco, Naucalpan. Photo by WRI México.

average temperature in the Mexico City metropolitan area has increased by 1.1°C since 1980 and is projected to increase by up to 2.2°C by 2050.[li]

Figure 14: Rio Hondo, Naucalpan. Photo by WRI México.

According to the Naucalpan Climate Change Action Plan of 2010 (PACMUNA), which is the most recent data on local emissions, transportation is the most significant source of emissions, contributing to 70.1% of the annual total.[lii] It is important to note that from the time of this report in 2010 to 2020, the number of registered vehicles in Naucalpan increased from 282,091 to 634,541, so emissions have likely increased significantly from the time of the last report.[liii] The UL in Naucalpan will be focused on the re-planning of an industrial district to create an inclusive district with mixed uses, public spaces and the restauration of the river that crosses the industrial and housing area. The Urban Lab aims to shift Naucalpan toward more equitable decarbonization by using a cross-sectoral project to address the effects of industrialization, transportation, climate change, and inequality.

Recife

Recife is a coastal city located in the northeast region of Brazil and is the capital of the federal state of Pernambuco. The city occupies an area of 218,44 km^2 in the Atlantic Forest biome, has an average altitude of 4m above sea level, and is divided by four rivers and numerous channels. Although population growth has declined in the past decade, Recife is still the 9th most populated city in Brazil, with a population of almost 1.7 million people.[liv] Due to its coastal position, projections show that climate change will contribute to sea level rise and cause significant change in precipitation pattern, increasing the risks of meteorological droughts, floods and landslides, intensification of heat waves and proliferation of disease vectors.[lv] In this sense, climate change is not just one more driver of environmental risks, but also a critical factor that might increase social, spatial and environmental conflicts and

inequalities in the city. For instance, more than half of the population lives in social housing called “Communities of Social Interest” (CIS). These communities are often the most at risk of flooding and extreme weather events and are the least likely to receive basic infrastructural services.[lvi]

The historic core of this city, located on an island called Bairro do Recife, was revitalized in 2000 through an innovative public private partnership that created an IT hub and generated 9000 jobs and 300 new companies, called Porto Digital. This founding place of the city has become the pilot neighborhood for innovation in Recife, where new initiatives are tested and implemented. Currently, however, the transformations are not evenly distributed in the neighborhood, so that two realities coexist on the same island: one in the center-south portion, where investments in innovation and rehabilitation of historical heritage and public spaces are concentrated, and another in the northern portion, where the recently approved Pilar’s Special Zone of Social Interest (ZEIS) and the old industries and warehouses are located. The understanding of these two realities, as well as the need for social inclusion and the connection of

Figure 15: Street fair in Recife. Photo by Adriana Preta/WRI Brasil.

solutions that address urgent problems of this needy population with a carbon neutral path, led to the definition of the perimeter of the urban lab in Bairro do Recife, which includes the Community of Pilar and its surroundings. There, projects of other initiatives have already been implemented, but none that generate a long-term transformation with a perspective of integration for the neighborhood. The population of ZEIS remains isolated inside a neighborhood that receives many investments, a reality that is repeated in several urban centers across the country with a history of occupations by vulnerable populations.

The main challenges to be faced in the Pilar community are spatial, territorial and socioeconomic integration, since most of the local population works in informal commerce and has no insertion in the neighborhood. However, a transition towards net-zero urban development in the neighborhood involves the challenge of connecting Porto Digital actors with the resident population of the neighborhood for the joint development of solutions that respond to the urgent needs of a vulnerable population but also to the impacts and effects of climate change. The Urban Lab in Recife can promote mindshifts and integrated solutions for the future of Recife, bringing together multiple stakeholders

Teresina

Teresina is located in the Brazilian Northeast, along the Parnaíba River. The city has approximately 871,126 inhabitants, of which around 94% live in the urban area.[lvii] The poverty incidence is estimated at around 47% and only 33% of people living in Teresina declared having an occupation in 2020.[lviii] The anthems of both the city and the state have many references to the Equator sun and hot weather, as the heat is a main feature of Teresina's climate and an important component of its peoples' identity. The temperature is above 32 Celsius 320 to 340 days a year, and the most intense heat occurs from September to December, when maximum temperatures above 40 degrees and air humidity around 20%.[lix] In contrast to this dry period, the first months of the year - from January to May - are characterized by short and intense storms and pluvial and fluvial floods. The Latin American Development Bank (CAF) Vulnerability Index considers the Teresina situation an extreme climate change risk, and the Brazilian Northeast is known as a hotspot for food insecurity and climate change.[lx] In a high emissions

scenario, the Brazilian Northeast will become 2-4ºC warmer and 15-20% drier. This changing weather will cause demographic shifts: research shows that between 2030 and 2050, there will be a 24% migration increase from rural regions to urban centers in the Brazilian Northeast.[lxi]

Figure 16: Edgar Gayoso, Teresina. Photo by Paulo Sérgio/WRI Brasil.

The increase in extreme heat is a major problem for the low-income communities. One such community is Edgar Gayoso, which was constructed under the national *Minha Casa Minha Vida* social housing program. This is where the IKI-TUC project in Teresina will focus. As in other housing projects built under the same paradigm, the population of Edgar Gayoso faces several socioeconomic problems aggravated by its peripheral and segregated location. The main local challenges are the lack or precarious access to public facilities and services, green and leisure spaces, employment and income generation opportunities, and reliable public transportation. In general terms, the population has low or no income (i.e., depends on social programs), has low schooling, and most households are headed by women, many of whom are solo mothers. Additionally, about 30% of the families have a person with a disability.

While it is possible to envisage future scenarios of increased emissions in Edgar Gayoso, the current challenges faced locally are much more related to a reality of climate injustice, where residents contribute little or nothing to climate change, but suffer disproportionately from its effects. Comprehensive interventions in the Edgar Gayoso neighborhood will impact the livelihood and resilience of residents through initiatives such as a program for generating employment and income with a focus on sustainability, a multipurpose community space and community gardens, focused on community food security. In addition, afforestation with native species will reduce heat island effects created by the lack of green areas. The project also aims at avoiding future emissions by reducing travel needs as new job and leisure opportunities are created in the neighborhood.

At the moment, housing policies at local and national level lack collaboration between the housing agency, the public utility, the sustainability program, civil society actors and community members. Current siloed practices of urban stakeholders lead to conditions where low-income communities are provided housing at remote locations away from job centers, further exacerbating their livelihood prospects. A key barrier to achieving a low carbon transition in Teresina is the inability of current practices to connect climate change to the immediate needs of the community and making them partners in the transition. There is the opportunity to connect the constituency seeking better housing and livelihoods with the advocates of resilience investment and deepen recognition of shared interests. An Urban Lab in this specific neighborhood will provide a model for urban transformation in thousands of Minha Casa, Minha Vida developments spread countrywide and comparable projects beyond Brazil.

Figure 17: Urban Lab in Teresina. Photo by Paulo Sérgio/WRI Brasil.

Inspirations and the road ahead

Transformative Projects

The concept of Transformative Urban Coalitions is inspired by projects from around the world that have used coalition-building, evidence-based research, and local collaboration to address complex urban problems. The WRI Prize for Cities and the European Sustainable Cities Transformative Action Award, for example, highlight each year those projects which inspire urban change-makers through their trailblazing projects and transformative change. A look through the most recent winners of these prizes reveals an important emphasis on cross-sector community-building, transformative change, and the scaling up of pilot

projects to broader municipal policies.

The 2020-2021 winner of the WRI Prize for Cities was “Sustainable Food Production for a Resilient Rosario”. This project, based in Rosario, Argentina, used urban farming to

of municipal bureaucracy as inflexible and top-down. Instead, the program highlighted how cities can use existing programs and political agendas as a source of strength while adapting to the needs of the climate crisis and economic inequality. These changes have

Figure 18: Rosario, Argentina. Winner of the 2020-2021 Ross Prize for Cities. Photo by the Municipality of Rosario.

build social, economic, and environmental resilience by adapting underutilized public land into space for local urban agriculture. The project did this in conjunction with an existing urban agriculture program to address both income and food needs as well as urban flooding risk. The development of this agriculture program challenged existing ideas

inspired agroecology initiatives and exchange between at least six more Argentinian cities and several cities across Peru, Brazil, and Colombia.[lxii]

In 2021, the Transformative Action Award was presented to La Titaranya SCCL, Spain. This project focused on the physical and social rehabilitation of the historical center of Valls using a strategy of civil inter

cooperation. The project plan incorporated housing, public space, organizational space, historical recovery, a local organic food store, a climate shelter, and an energy community. In addition, it was built through a process of cooperation across sectors, including civil society, government, and private industry. By incorporating eight cooperatives, five NGOs, and a wide variety of community members, the project pushes beyond siloed sectoral responses to rehabilitation and aims for full urban transformation.[lxiii]

The creation of coalitions and the development of enabling conditions for municipal change are fundamental aspects of each of these projects' success. By empowering local stakeholders to address concerns at the intersection of climate change and inequality, the path-dependency of existing systems can be interrupted, creating space for a new vision of sustainable urban space.

Conclusion: The global vision

The ultimate goal of the TUC project is to create an enabling environment that will lead to urban transformation towards socially just zero carbon cities, with a focus on new governance patterns, mindset shifts, and new actor coalitions.[lxiv] Urban leadership is critical for achieving global zero carbon emissions, and to be sustainable, this rapid decarbonization has to be socially just. Urban transformation must be inclusive and driven by the needs and views of diverse groups of stakeholders. Therefore, this project facilitates the establishment of transformative urban coalitions to develop new strategies for addressing local challenges in urban development and inequality while at the same time reducing carbon emissions.

Figure 19: Urban Lab planning community interventions in León. Photo by WRI México.

This ground-up, collaborative transformation has been central to many successful urban initiatives and provides an alternative to the kinds of high-carbon, resource-intensive urbanization that risks continuing to exacerbate inequality. The urban labs will serve as test beds for accelerating change from different sectors under different conditions while the Community of

Transformation will provide a space for collaboration and coordination of best practices across the consortium. These coalitions will be accompanied by capacity building, film, and shared narrative creation around new mindsets and governance practices for decarbonization. These practices will lay the groundwork for broader urban sustainability transformations. Finally, longitudinal impact-oriented research will draw conclusions on promising sustainability strategies under different pre-conditions and broaden the horizons of the project to contribute to global knowledge-sharing about decarbonization.

Building change that starts with coalitions and focuses on transformation of an existing system is effective not only in accomplishing better outcomes for urban citizens but in doing so equitably and sustainably. The TUC project aims to achieve both a path to zero-carbon cities and a process of coalition-building that creates the conditions for equality and sustainability in future projects worldwide.

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