Transformative Urban Coalitions

CITY PROFILES NO.4

RECIFE, BRAZIL

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RECIFE

About TUC City Profiles

To fight the climate crisis, cities have to become more sustainable now. Transformations towards sustainability must be based on the specific urban characteristics of each city. An analysis of the current factors that may or may not enable urban sustainability transformations is a first step for developing locally suited strategies.

TUC City Profiles is a series of short reports developed as part of the Transformative Urban Coalitions (TUC) project to share insights into the existing challenges and opportunities to address cross-cutting urban sustainability transformation and development issues through inclusive climate action in the five Latin American TUC cities.

The following short report summarizes the main findings from a political economy and ecology analysis of Recife, Brazil, describing its main geographic, socioeconomic and environmental characteristics as well as climate governance set-up. It concludes with suggested entry points for transformative change towards sustainability.

This TUC City Profile was developed by United Nations University – Institute for Environment and Human Security (UNU-EHS) in collaboration with the German Institute of Development and Sustainability (IDOS). It is based on an assessment carried out between February and August 2022.

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Reviewer: Ariadne Samios.

Cover image: Informal settlements along the Capibaribe river in Recife, on April 20, 2022. © ARIANNA FLORES-CORRAL / UNU-EHS

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Key Messages

Recife is a prominent front-runner for climate policymaking in Brazil, having formulated robust plans and strategies at the city scale. The next step is to overcome the gap between strategic planning and local action at the neighbourhood scale.

Historically, urban development in Recife has been marked by social inequalities. **To ensure social inclusion and justice in climate action, it is critical to open up governance structures to include bottom-up, community-based approaches and incentivize co-production of urban space between governmental and non-governmental actors.**

Climate action can build on opportunities to also tackle inequalities in Recife, prioritizing the most vulnerable communities. To support this goal, **social indicators can be used next to traditional emissions data to assess how transformative climate action is in the city.**

The climate agenda should be mainstreamed into urban development in Recife, particularly in the context of upgrading informal and low-income settlements. Capacity development and awareness-raising activities drawing on local expertise, knowledge and practices can facilitate that.

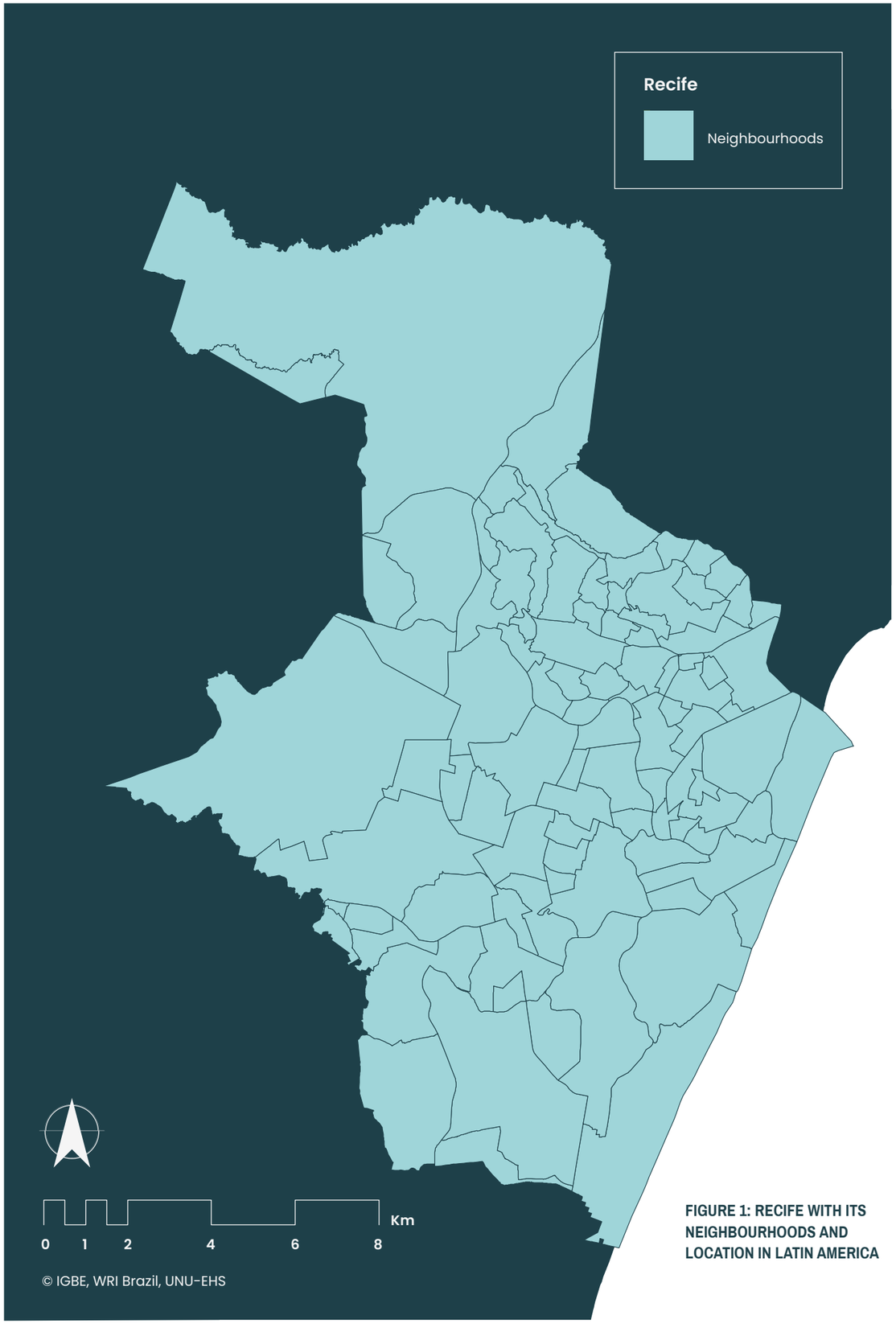

FIGURE 1: RECIFE WITH ITS NEIGHBOURHOODS AND LOCATION IN LATIN AMERICA

1. Urban Development in Recife

Recife is the capital of the federal state of Pernambuco and is an economic, political, educational and cultural centre of the Brazilian Northeast (see **Figure 1**). Like many cities in Brazil, historically its urban development was marked by social inequalities that are still visible today. Urbanistic interventions in the twentieth century, such as the Port Reform and the Sanitation Plan, resulted in the displacement of low-income groups from the city centre in favour of business and other commercial uses (Prefeitura do Recife, 2018). Without further alternatives, many vulnerable communities evicted from central areas had to relocate to more environmentally fragile and hazard-prone areas, often in remote places. This urban expansion to the fringes of the city was uncontrolled and mainly characterized by the establishment of informal settlements (Agência Recife para Inovação e Estratégia (ARIES), 2022).

Economic opportunities are unevenly distributed in the territory. Sixty-seven of the 94 neighbourhoods in Recife are occupied mostly by vulnerable or informal settlements, where the average income is lower than the citywide average (R$ 983.86 compared to R$ 1.755,61) (ARIES, 2022). The overlap of environmental risks with low-income areas can be seen particularly in the northern region of the city, where seven of the ten neighbourhoods most at risk from climate change effects are located (Prefeitura do Recife, 2018; ICLEI - Local Governments for Sustainability, 2020). The whole area suffers from a high risk of landslides as well as limited provision of basic infrastructure, such as water and sewage networks, exacerbating living conditions.

This, however, is not an isolated case of environmental injustice. Many informal or low-income settlements in Recife do not have regular access to water supplies and appropriate sanitation, contributing to ongoing environmental degradation. In 2017, 85.85 per cent of the population had access to piped water; however, there were differences among social groups. In Communities of Social Interest (CIS), low-income communities with precarious urban infrastructure, 49 per cent of people do not have daily access to water despite 93 per cent of residents being connected to the water grid (Diagonal and JWurbana, 2018). Moreover, the majority of these settlements are located in areas considered inadequate for dwelling, as for example stilt houses on rivers and canals demonstrate. In 2015, Recife still had 59 stilt communities, comprising more than 32,000 people living in fragile structures over water bodies (Prefeitura do Recife, 2018). In total, there are 546 CIS, occupying 30 per cent of the built area of the city and consisting of 53 per cent of its population. In these communities, the population density is more than double the municipal average. More than two-thirds of residents are located 6 km or more away from the city centre (Prefeitura do Recife, 2018; ARIES, 2022), which limits their access to urban services, such as hospitals, schools and cultural facilities, as well as work opportunities.

Out of the total of 546 CIS, only 162 are defined as Special Zones of Social Interest (ZEIS) (Prefeitura do Recife, 2018). The attribution of ZEIS in the zoning law facilitates securing land titles for residents and the implementation of adequate infrastructure and services. As a consequence, the remaining non-ZEIS CIS – representing 14 per cent of Recife's population – still lag behind in the fulfilment of their "right to the city" (ARIES, 2022). This also implies a major challenge in achieving greenhouse gas (GHG) emission reduction targets while expanding the sanitation infrastructure. At the same time, it is an opportunity to meet local demand with innovative low-carbon solutions.

Strong real estate market pressure and high competition over urban land also contribute to the formation and consolidation of informal settlements in the city, as demonstrated by the conflicts over land in the three ZEIS Brasilia Teimosa, Pina and Coque. Despite promising efforts, the municipal authorities have not managed to enforce a just spatial development and the real estate market has become the main driver of urban growth (ARIES, 2022). Against this background, the provision of adequate housing is a core issue in the city. In 2017, the housing deficit was 277,183 units (Prefeitura do Recife, 2018). In 2018, almost 14 per cent of the population was living in risk-prone areas, mainly affected by landslides and flooding (*idem*). Providing appropriate housing alternatives, hence, is a challenge as relocation can conflict with the preservation of a community's livelihood and safety. Moreover, this number is likely to dramatically increase due to the impacts of climate change.

Recife's geography entails an already high level of risk as it is a coastal city with an average altitude of 4 metre above sea level, crossed by four rivers (the Beberibe, the Capibaribe, the Jordão and the Tejipío) and more than 70 channels. Climate change projections and risk assessments show that risk levels will increase significantly, mostly in the form of sea level rise, meteorological droughts, extreme rainfall events, floods, landslides, intensification of heatwaves and proliferation of disease vectors. Despite these projections, the city continues to experience significant formal development in areas threatened by sea level rise, without considering adaptive measures.

Along with the physical environmental conditions, the urbanization of the territory is marked by (i) densely occupied plains, (ii) extensive channelling of rivers, (iii) landfilling along beaches and riverbanks, (iv) occupation of riverbanks and environmentally fragile areas, (v) poor sanitation, (vi) inadequate disposal of solid waste, and (vii) high levels of soil sealing. All of these factors represent a great challenge for drainage and sanitation systems and increase the risk of floods (Leão, Andrade & Nascimento, 2021; Prefeitura do Recife, 2018; ICLEI, 2020; ARIES, 2022).

Community Garden in Caranguejo Tabaiares, informal settlements in Recife, on April 20, 2022.
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The solid waste management system accounts for a network of 2,242 registered urban waste pickers and seven cooperatives for waste triage (ARIES, 2022). Today, 100 per cent of the solid waste collected is adequately disposed of (*idem*). Yet, waste collection services face limitations, particularly in informal settlements, due to a lack of accessibility to their narrow streets. Regarding wastewater, only 42.6 per cent is adequately directed to wastewater treatment (United Nations Development Programme, Fundação João Pinheiro and Instituto de Pesquisa Econômica Aplicada, n.d.). This deficiency is highly concentrated in CIS (Observatório de Saneamento Ambiental do Recife, 2017), a situation that results in serious environmental and health problems.

Spatial inequalities are also visible in the way that green areas are distributed. Out of the 94 neighbourhoods in the city, 55 have less than 12 m^2 of green areas per inhabitant and 5 have less than 1 m^2 per inhabitant. There are 13 neighbourhoods with no access to public green spaces, such as public parks, gardens or squares. Moreover, Recife is still experiencing expansion of informal settlements in or close to conservation areas (Prefeitura do Recife, 2018), where the competition for land is significantly lower. This results in the occupation of environmentally sensitive areas and thus contributes to increasing the risk of disaster.

There is spatial concentration of formal jobs offers in five neighbourhoods in the city: Boa Viagem, Várzea, Santo Amaro, Bairro do Recife and Boa Vista. These are known for being the historic centre of the city. The disconnection between residential and job-offering areas implies long hauls for most workers. Moreover, the displacement between Recife's periphery and adjacent municipalities imposes time-consuming travel in carbon-intensive transportation.

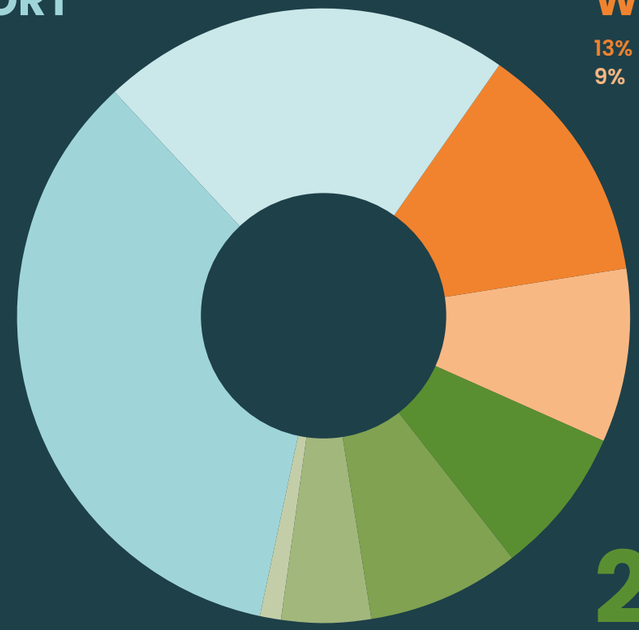
The road network in Recife is structured in a radial system, where main roads converge on the city centre. The latest road developments took place more in the hinterland to connect the city to peripheral industry and port areas, not always considering connectivity or ecological aspects. In addition, the number of cars has almost doubled in the city in the past decade and there is a huge number of private vehicles circulating in the city coming from neighbouring municipalities (Global Future Cities Program, 2018). According to origin-destination research conducted in 2016, while about 80 per cent of the wealthiest people in Recife use private cars for commuting, 80-90 per cent of the poorest individuals commute by foot or public transportation (Schreiner, 2017). The share of use of different transportation means in the city replicates the climate injustice debate on a global scale, where the individuals who contribute less to it are the same ones that will suffer most from climate change impacts.

Overall, the transport sector is the main source of GHG emissions in Recife (57 per cent), followed by the waste sector (22 per cent) and the stationary energy sector (21 per cent) (Pinto and others, 2020) (See **Figure 2**). Percentages do not add up to 100 per cent due to rounding. But Recife has already managed to reduce GHG emissions significantly in the past decade, mainly because of improvements in waste treatment, expansion of wastewater infrastructure and cycling infrastructure, and investments in public transport (*idem*). Nevertheless, there is a long way to go in order to achieve carbon neutrality by 2050, as aspired to by the city.

Distribution of total GHG emissions in Recife by sector

57 %
TRANSPORT
35% On-road
22% Aviation

22 %
WASTE
13% Solid waste
9% Wastewater



21 %
ENERGY
8% Residential buildings
8% Commercial and institutional buildings
5% Industries
1% Fugitive emissions

FIGURE 2. (DATA FROM 2017)

Source: Pinto and others, 2020.

View of South Recife, on April 20, 2022.
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2. Climate Governance

Recife is considered a pioneer of climate action in Brazil, with strong international partnerships and the adoption of a climate agenda at the municipal level. Since the early 2010s, the city has rapidly developed a robust legal and policy framework for tackling climate change. During this relatively short period, three phases can be identified for urban climate governance in Recife:

EMERGENCE IN THE EARLY 2010s

Recife's first explicit commitment to climate action is from 2012, when the city participated in the Urban-LEDS project, an initiative co-led by UN-Habitat and ICLEI and funded by the European Commission. The objective was to create a cross-sectoral framework to foster low-carbon development in the municipality. The first two important milestones were the creation of Recife's Sustainability and Climate Change Committee (COMCLIMA) and the Executive Group on Sustainability and Climate Change (GECLIMA) in 2013.

MATERIALIZATION IN THE MID-2010s

In 2014, the local government established its Sustainability and Climate Change Policy, based on the National Policy on Climate Change (2009) and the State Policy for Combating Climate Change in Pernambuco (2010). In 2015, Recife prepared its first climate action plan, the Greenhouse Gas Emissions Reduction Plan: Sustainable and Low Carbon Recife (SLCRP). The plan served as a basis for the development of the most recent master plan for the city, devised in 2021. So far, Recife has developed three GHG emissions inventory to support policymaking, published in 2015, 2017 and 2020, respectively. In 2017, the city also developed its first water footprint inventory, a crucial topic in water-scarce Brazilian Northeast. The third GHG inventory, published in 2020 with reference years 2016-2017, was the first one developed by the local government itself, though it was still supported by ICLEI and Waycarbon.

CONSOLIDATION IN THE LATE 2010S / EARLY 2020S

In 2019, a Climate Risk and Vulnerabilities Analysis and Adaptation Strategy was developed, with support and funding from the Development Bank of Latin America (CAF). In the same year, Recife became the first city in Latin America to declare a Climate Emergency (Pinto and others, 2020). On that occasion, Recife committed to ensuring a just transition to a carbon-neutral future by 2050. It established three pillars to address climate justice: (i) civil society must be included in the formulation and implementation of climate change policies; (ii) youth organizations need to be integrated in those processes as well; and (iii) vulnerable communities need to be prioritized, as well as communities historically and disproportionately affected by environmental injustices.

Overall, three key documents guide Recife's plans for climate mitigation and adaptation. The main long-term strategic document is the Plan Recife 500 Years, which was reissued with updates in 2022. It provides a cross-sectoral and long-term strategy to guide other plans in the city. The *Plano Diretor* (master plan) (2021) presents general guidelines to foster low-carbon and resilient urban development. Finally, the Local Climate Action Plan (PLAC), developed in 2020, directly addresses climate-related issues. All these documents translate the efforts of mainstreaming climate change in public policy at the city level.

Climate change is also a concern of other sectoral plans. The Sectoral Adaptation Plan, covering Urban Transformation, Sanitation, Mobility and Economy, is currently being developed by the ARIES under the CITinova Project financed by the Global Environment Facility (GEF). The Urban Mobility Plan of Recife will also play a fundamental role in the reduction of GHG emissions in the city given its focus on intermodal integration, lending special attention to active mobility, namely walking and cycling.

Recife not only has been active in the formulation of its climate agenda but also has recognized that climate change mitigation and adaptation cannot be achieved through stand-alone projects as vulnerability to climate change effects is deeply connected with historical social inequalities. The planning framework built in the past decade includes the concept of social justice as one of the main development pillars. The *Plano Diretor* aims to enforce a well-balanced and just use of urban land and address socio-spatial disparities in the city, to name just a few strategic goals. The Plan Recife 500 Years targets the concept of an "inclusive city" as one of its development visions. The same plan aims to promote safety, as well as gender and race equality, although it does not have adequate disaggregated indicators to monitor progress in these fields.

Most of the indicators in line with a social justice perspective are associated with adaptation measures, not mitigation. Only one exception can be found within the energy sector in Recife, and it relates to the development of new social housing projects and other public facilities that should now consider measures to reduce energy consumption in the city. The energy axis of PLAC foresees the procurement of public works prioritizing the use of sustainable materials, efficiency and nature-based solutions. However, the visions included in Recife's planning documents, especially PLAC, are still at the strategic level and lack translation into concrete actions at the community scale. Therefore, exploring how measures to reduce GHG emissions can also tackle inequalities in the city remains a challenge.

Bike lanes in Recife, on April 20, 2022.
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Basilica and Convent of Our Lady of Mount Carmel, Recife, on April 20, 2022.
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Recife has a variety of participation mechanisms for climate governance, including for the development of the *Plano Diretor*, the *Plano Estratégico* (Strategic Plan), municipal budgeting and PLAC. However, participation has often been limited to a consultative process, without binding effect. Whereas the strategic documents in the city have been developed in a participatory way, the participatory processes to develop concrete action plans seem very limited. A top-down and professional-led decision-making process is reinforced by the government, with outdated policies and infrastructure, and an often technocratic mentality. This perspective is in opposition to a more bottom-up and community-led co-production practice and reinforces a lack of trust from the communities towards public authorities.

International cooperation agencies have played a key role in the development of Recife's climate agenda by providing technical assistance, funds and supporting the development of plans. The city is part of important networks and programmes, such as: the Forum of Environment Secretaries from Brazilian Capitals, the Global Covenant of Mayors for Climate and Energy, the Global forum Daring Cities, the Cityfood Network, and the Cities Climate Finance Leadership Alliance, among other initiatives. Since 2022, Recife has been recognized by the United Nations Office for Disaster Risk Reduction as a resilience hub, one of only four in the Americas and the Caribbean.

Some of these networks seek to improve communication among different government spheres and strengthen collaboration among cities in Brazil and globally. The support of such networks is a relevant factor for the creation of local climate policy. However, urban climate governance still faces challenges in continuity as climate policy was institutionalized at the local level mostly through weak legal devices, such as municipal decrees, or as ordinances and normative instruments (Oliveira and others, 2021). Discontinuities in the local government's commitment to the topic due to changes in government and priorities can still compromise the accomplishment of climate goals.

Limited coordination with federal and state levels might also be a challenge for climate governance in the city. Many important sectors for climate mitigation, such as air transport, sanitation and energy, do not fall under municipal authority; and most infrastructure is provided by state companies. Additionally, a significant part of GHG emissions in Recife originate from activities beyond city limits, within the metropolitan area or even beyond. Besides, the majority of the municipal budget comes from intergovernmental transfers (at national and state levels), which account for approximately 46 per cent of total municipal revenue (Portal da Transparência do Recife, 2021). This points towards a dependency on national and state government levels for investment in the city, highlighting the importance of multilevel governance. Climate action in Recife has also significantly benefited from domestic and international development finance sources. In the past, the city was able to access funding from ICLEI, CAF, the European Union, UN-Habitat and GEF. Collaboration with the private sector is another important factor in Recife's efforts to tackle the climate emergency. Promising initiatives include the development of insurance solutions against climate disasters (ICLEI, 2022).

The city also has a funding mechanism for small-scale environmental and climate projects proposed by civil society. The Multiannual City Budget Plan anticipates that 10 per cent of the Municipal Environmental Fund (FMMA) should be allocated to projects selected through an annual tender released by the Department of Environment and Sustainability (SMAS). Any civil society organization can apply, with funded thematic areas varying according to the SMAS focus at the time. The Municipal Environment Council is in charge of selecting projects to be awarded. Similarly, the *Fundo Casa Socioambiental* offers funding for initiatives and projects for civil society organizations, including in the fields of climate change adaptation, sustainable cities, environmental protection and community development.

Street Art in Ilha do Recife, Recife, on April 20, 2022.
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3. Entry Points for Urban Sustainability Transformation

The entry points for transformative climate action identified in Recife can be grouped into five core categories:

MAINSTREAM CLIMATE ACTION INTO MUNICIPAL AGENDAS

To achieve socio-spatial equity, the city requires robust and long-term investment in the provision of basic infrastructure, upgrading informal settlements, land titling, social housing, disaster risk reduction and adaptation measures, among other areas. Climate action should be mainstreamed into other municipal agendas, especially urban development. A transformative approach is needed that goes beyond addressing immediate needs but anticipates future risks and ensures a low or at best zero-carbon footprint. This is especially true in the upgrading of informal and low-income settlements, which will likely increase GHG emissions due to the use of energy and resources. Upgrading projects should be low carbon and bring other benefits to the community. Additional opportunities can be found in sectoral plans, such as the Urban Mobility Plan, or in developing environmentally viable forms of livelihoods and occupation of public spaces.

LINK CLIMATE ACTION TO SOCIAL JUSTICE

Social indicators directly related to climate action should be formulated and applied to the monitoring process. A clear connection between avoiding and reducing GHG emissions and tackling socio-spatial inequalities can be a powerful tool to prioritize project areas and the scope of projects. Therefore, transformative climate action should also aim to address other key challenges beyond climate risks faced by vulnerable communities. Additionally, climate action should also consider aspects such as gender, race and class. This could contribute to overcoming historically based inequalities in Recife. For example, only about 16 per cent of the total amount of bike trips in the city are made by women (Instituto da Cidade Pelópidas Silveira, 2016). Applying a gender lens to climate mitigation measures to improve active mobility can address the significant gender disparity in the use of bikes as a mode of transport in Recife. Indicators that relate climate action to vulnerability can then inform plans and projects for a more equitable and sustainable use of public funds.

TRANSLATE CLIMATE POLICY INTO ACTION

Recife has formulated robust climate plans and strategies at the city scale. However, one of the main challenges to advance the climate agenda in the city is their implementation. A lack of executive projects is the main obstacle and severely affects the capacity to access funding. Currently, SMAS is seeking partnerships with academia and other organizations to carry out executive projects. It is also necessary to overcome the distance between strategic development and local action at the neighbourhood scale, especially regarding PLAC. One way to undertake this task, while prioritizing vulnerable communities, is by developing pilot projects in ZEIS. While upgrading these areas, low-carbon strategies can be tested and validated for future upscaling and replication.

PARTICIPATION & BOTTOM-UP CLIMATE ACTION

The participation of citizens and community-based organizations in urban decision-making processes is key to bridge climate action and social justice. Through participation, it is possible to better understand the needs of citizens so at the same time they can contribute to and feel part of the solution. Therefore, Recife should improve the capacity of engagement of governmental and non-governmental actors and ensure deeper levels of participation of civil society in decisions and projects being implemented in the city. Participation can go beyond consultation and involve non-governmental actors in all stages of the transformation process: assessing needs, designing solutions, developing projects, implementing and monitoring. Various local organizations can share existing learnings and good practices from their experiences working on the ground, recognizing demands at the community level and prototyping solutions that can be scaled-up with support from the local government. Instruments to financially support these practices, such as funds made available by FMMA, are a way to build innovative partnerships between government and non-governmental organizations.

AWARENESS-RAISING & CAPACITY DEVELOPMENT

Although climate narratives and action gained traction through Recife's participation in international networks, there is still a long way to go in terms of building capacity for climate action. Increased capacity is required for civil servants to better integrate the climate and sustainability agendas into other governmental plans, policies and projects. Citizens could also benefit from awareness-raising, and their participation in decision-making spaces could be enhanced by capacity development and capacity sharing programmes across local actors. These capacity-building activities can draw on learnings from organizations and movements that are already working on the topic in the city, such as *INCITI - Pesquisa e Inovação para as Cidades, Coletivo Arquitetura, Urbanismo e Sociedade,* Youth Climate Leaders and *Ameciclo,* thus supporting existing knowledge and practices.

Transformative climate action requires deeper involvement of NGOs and vulnerable communities in efforts to mainstream mitigation and adaptation goals into urban development agendas.

People gather for cultural activities during a car-free day in Recife, on April 10, 2022.
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Transformative Urban Coalitions

ABOUT

Transformative Urban Coalitions

The Transformative Urban Coalitions (TUC) project is implemented by the United Nations University - Institute for Environment and Human Security (UNU-EHS), the World Resources Institute (WRI) together with its national offices in Brazil and Mexico, the International Institute for Environment and Development (IIED) together with IIED – América Latina in Argentina, and the German Institute of Development and Sustainability (IDOS), with support from the German Federal Ministry for Economic Affairs and Climate Action under its International Climate Initiative.

TUC seeks to shift the sustainability trajectory of cities towards zero carbon emissions by 2050 by altering the deeper social, technological and political structures and systems that are currently reinforcing high-carbon, resource-intensive urbanization. To achieve this goal, this project facilitates the establishment of transformative urban coalitions in five Latin American cities to develop new strategies for addressing local challenges in urban development and inequality while at the same time reducing carbon emissions.

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