

Briefing

Climate change; Urban

Key findings and recommendations from urban climate action for policymakers and practitioners



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Key points

Climate action should be part of city-level and national climate planning for informal settlements, and integrated into local government policies and community urban upgrading agendas.

Climate action should prioritise local needs and ensure all actors have access to data and information to enhance participation, enable informed decision making, and unpack complex social and environmental problems.

Urban labs can foster the co-creation of ideas, social and technical innovation, and collaborative planning in real life scenarios among diverse stakeholders across a range of settlements and cities.

Factoring climate change into urban upgrading processes complements efforts to address basic needs and fulfilment of fundamental rights, and practitioners and communities need more scalable examples.

Climate justice in informal settlements in Buenos Aires

While hundreds of millions of people live in informal urban settlements worldwide, few studies or published practical experiences discuss the integration of climate change adaptation and mitigation into participatory low-income settlement upgrading processes. This absence generates further inequities, as climate action focuses on wealthier parts of the city. Interventions that address climate extremes and threats in low-income neighbourhoods, risk mitigation, and community engagement in decarbonisation and in decisions regarding the climate agenda all require more thought and practice. Barrio 20 is an informal settlement in the city of Buenos Aires that is leading in this direction. After participatory urban upgrading since 2016 with no focus on climate issues, over the last three years Barrio 20's process has embraced climate action and learned from the collective implementation of pilot interventions.

More than one billion people are estimated to live in informal settlements worldwide.¹ In Latin America 23 out of 100 people live in informal settlements,² mostly concentrated in the larger cities of the region, where informal areas house between 20% and 50% of the population.³ In Argentina 11 out of 100 people live in informal settlements (equivalent to 5,280,000 people).⁴

There is wide recognition of comprehensive upgrading or urban integration as a suitable approach to challenges informal settlements present. But policies and programmes have not yet been able to address the scale of the problem, much less create opportunities for social and technical innovation for climate adaptation and decarbonisation.

Climate change disproportionately affects the poorest and most vulnerable populations, amplifying risks associated with unplanned

urbanisation and adding levels of stress.⁵ Yet there are few studies of the integration of climate change adaptation and mitigation into low-income neighbourhood upgrading processes.⁶ This absence generates new climate and socioeconomic inequities — for example, relating to the interaction between climate-blind upgrading and risks such as extreme heat or flooding.

Because informal settlement upgrading often occurs without a focus on risks and resilience, few accessible examples are available to local communities, practitioners and decision makers of how to integrate climate action within urban upgrading processes. Until recently, this was the case in Barrio 20 in the city of Buenos Aires. Barrio 20, an informal settlement with roughly 30,000 inhabitants has, since 2016, undergone a participatory urban upgrading process, initially using conventional infrastructure.

Until 2021, the process lacked any focus on just and sustainable transformation. Since 2021, however, an urban lab in Barrio 20, supported by the Transformative Urban Coalitions project, has worked with local actors (community, local government, academics and professionals) to integrate climate action within the reurbanisation (upgrading) process.

Urban labs are “a public policy approach ... increasingly ... used across the world” comprising “regular gatherings of a diverse range of stakeholders who collaborate and exchange knowledge to collectively co-create innovative solutions for complex urban challenges in a way that is participatory, cross-sectoral and inclusive”.⁷

Transformation in Barrio 20

Barrio 20's urban lab has supported the development of new co-produced strategies to address local urban development challenges and inequality, while reducing carbon emissions. Participants have developed practical examples of the integration of climate action in contexts of urban informality in the form of a set of pilot projects and awareness raising, data collection and capacity-building activities.

Different tools were used to facilitate the prioritisation and selection of sites, and the definition of scales and types of intervention,

and to develop initial ideas and then advance these in the architectural and landscape design of the pilots and their implementation. As a whole, the urban lab prioritised interventions with an impact on the broadest possible group of people, and favoured interventions in public

spaces. In addition, it was agreed to have pilots with different levels of complexity, thus combining interventions that require the commitment of a small group of people with those demanding more collaborative work among different neighbourhood groups.

The application of nature-based solutions (NbS) was prioritised because they are easily adaptable to the neighbourhood scale and relatively easy to implement. NbS are a good complement for grey infrastructure (for storm- and waste water), as well as contributing to solving multiple needs, such as facilitating water run-off, moderating temperatures, improving water quality and circulation, providing biodiversity, and so on. The pilot projects were essential to show realistic ways of integrating climate action into

the redevelopment process and the creation of solutions.

The urban lab selected pilot projects involving physical interventions with three levels of complexity, according to the scale of the work and the pre-existing situation:

- Redesign of projects: building new alleyways in the historic district
- Retrofitting interventions of lesser complexity: building new alleyways in the new housing sector and the historic district
- Interventions of greater complexity: initially in a street within the historic district, later changed to a public space (Plaza Las Risas) and a school playground (School No. 11), due to delays in the general work of the Integral Reurbanization Program (Programa Integral de Reurbanización, PIRU).

Pilot interventions

Alleyway in the historic district. Pasaje Eva Estela Carrizo — Manzana 19 was originally totally paved, with no possibility of adding vegetation. The new design included larger planting areas opened up on paved ground, the incorporation of protective fences, vertical structures for vines and signage with plants' native names. Activities included community planting. Neighbours and local institutions organise maintenance.

Alleyway in new housing. Pasaje Teresa Rodríguez was created as a new alley between new housing blocks. The original design had consisted of mostly paved areas with little space for vegetation, let alone trees. Larger planting areas were opened on paved ground; native vegetation was planted (shrubs and trees); a pergola for vines to add shade, a protective fence and an irrigation system were installed. Planting included signage with plants' native names. Activities included community planting, workshops and development of strategies for the area's collective maintenance.

School No. 11. A new building was constructed during the PIRU, with a large playground with no shade or greenery, and exposure to sun all day. The new project included needs presented by the school community and involved a series of pergolas and planters with vines and native plants, an irrigation system, benches, and safer access to the playground and school. Training activities developed with students and teachers included the creation of vertical gardens with recycled materials, hydroponic vegetable growing, and communal planting and maintenance activities.

The urban lab prioritised interventions with an impact on the broadest possible group of people, and favoured interventions in public spaces.

Public space: Plaza Las Risas. This intervention involved the restoration of a large public space. Work was divided between different community groups and involved soil preparation, restoration of public green space with ecological recycled bricks produced in the barrio, installation of pergolas and vertical structures, a rain garden, planting of native trees, shrubs and vines, and an irrigation system.

The urban lab managed the pilots, which local building cooperatives and organised neighbourhood groups implemented, demonstrating agency and ownership. The lab supported the process with awareness-raising activities.

In addition, given the increase in extreme heat events in the city, the Barrio 20 project installed a temperature and humidity monitoring system in the neighbourhood (the first of its type), to provide accurate data and inform comparisons with other city areas. Urban lab participants including trained residents collect, analyse and share the data. Complementary to this is the collection of indoor temperature and electricity consumption data. Collection of this information aims to guide better decision making.

Several other awareness-raising, knowledge-sharing and training activities, many led by community organisations, have contributed to the creation of murals and vertical vegetable gardens. And exchanges with other cities and projects have helped bring about a better understanding of what climate change means, and what can be done, in the context of an informal settlement.

Positive impacts

As a result of the Barrio 20 example, new governmental and non-governmental actors are getting involved in addressing the needs of informal settlements. They bring new insights, possibilities of engagement and action based on new discussions. And they open space for social and technical innovation, and support needed mindset shifts to trigger transformation.

Processes such as the one developed in Barrio 20 benefit all actors directly or indirectly involved in the urban lab and the implementation of pilots. Actors gain new climate knowledge adapted to the context of an informal settlement and tools to address climate challenges. In Barrio 20, community organisations and local cooperatives co-designed and implemented interventions and activities, supported by other urban lab members, generating income earning and training opportunities, and helping strengthen the coalition.

Box 1. Valorisation by the community

The interventions carried out in Barrio 20's alleyways have improved living conditions in relation to the climate. More than 70% of households in the alleyways where the project was implemented have indicated that the intervention has meant an improvement in their quality of life. They expressed this especially in relation to (i) having a better view and landscape, (ii) the presence and proximity of plants, vegetation and green spaces, and (iii) enjoying fresher air.

Before, during and after the implementation process, the pilot interventions in Barrio 20 have stimulated neighbourhood relationships and nurtured collaborative spaces. This has resulted in several unexpected benefits. Residents' range and frequency of activities carried out in post-intervention alleyways have increased. People also appreciate the improvement in thermal comfort, with surveys showing the benefits of having more natural shade, a pleasant and cooler climate, and less direct exposure to the sun.

The production and sharing of data on temperature and humidity in Barrio 20 make climate-related inequalities between city neighbourhoods visible. This information is powerful in terms of shaping local agendas and future upgrading processes, as well as in bridging gaps between scientific knowledge and citizen science.

The application of NbS in a context such as Barrio 20 — showing their low cost, ease of implementation and complementarity with traditional infrastructure — has facilitated their uptake by the community and local government.



The regenerated playground at School No. 11, with new pergolas, planters and benches, providing more greenery and shaded space for children to play in. © Jorgelina Hardoy/IIED América Latina

The Institute of Housing of the City of Buenos Aires has now incorporated into its designs the solutions proposed and tested by the Barrio 20 process. And it is now incorporating the idea of working with NbS into its tender documents. Community organisations have taken ownership of interventions and replicated some of them, such as vertical gardens.

Climate-focused interventions contribute to reducing CO₂ emissions as a result of the increase in vegetation coverage, with two complementary effects: (i) new vegetation (trees, shrubs, and climbing and herbaceous plants) directly capture CO₂; and (ii) new shaded spaces, and the replacement of impermeable surfaces with permeable ones, produce a cooling effect. This provides bioclimatic comfort in outdoor spaces and reduces the interior temperature of adjoining houses, thereby reducing the demand for thermal air conditioning in summer, and delivering health and energy saving benefits.

Lessons learned

Several key lessons were learned from the process:

First, climate action needs to be recognised and promoted as part of city-level and national planning for informal settlements, and integrated into local government policies and community urban upgrading agendas to enhance equity and overall well-being. This should become the norm to avoid risks of maladaptation and unsustainable development pathways. Solutions should tackle both pressing everyday needs and climate adaptation and mitigation together; be co-designed and implemented by the community to ensure they fit the context and local needs; and be easily replicable, relatively low budget, and short term to generate impact and buy-in among all those involved.

Second, climate action initiatives in local communities should prioritise local needs

Notes

¹ Satterthwaite, D (5 October 2021) Upgrading informal settlements in the global South: transforming relations with government, transforming lives. / ² López, P (17 March 2022) Hacia un mejor acceso a la vivienda en América Latina y el Caribe. Banco de Desarrollo de América Latina y el Caribe, CAF. / ³ Adler, V, Vera, F, Wainer, LS, Roquero, P, Poskus, MA, Valenzuela, L, Letelier, M, Olivares, P, Treimun, J, Gamboa, A et al (2018) Housing what's next?: from thinking the unit to building the city. Inter-American Development Bank. doi:10.18235/0001594. / ⁴ Ministry of Economy, Socio-urban integration: ReNaBaP. www.argentina.gob.ar/habitat/integracion-socio-urbana/renabap / ⁵ Hardoy, J and Pandiella, G (2009) Urban poverty and vulnerability to climate change in Latin America. *Environment and Urbanization* 21(1). doi:10.1177/095624780910301; Revi, A, Satterthwaite, DE, Aragón-Durand, F, Corfee-Morlot, J, Kiunsi, RBR, Pelling, M, Roberts, DC and Solecki, W (2014) Urban areas. In: Field, CB and Barros, VR (eds) *Climate change 2014: impacts, adaptation, and vulnerability. Part A: Global and sectoral aspects. Working Group II Contribution to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press, Cambridge, UK and New York, USA; Hallegatte, S (2016) Shock waves: managing the impacts of climate change on poverty. World Bank, Washington, DC; Satterthwaite, D, Archer, D, Colenbrander, S, Dodman, D, Hardoy, J, Mitlin, D and Patel, S (2020) Building resilience to climate change in informal settlements. *One Earth* 2(2) 143–156. doi:10.1016/j.oneear.2020.02.002; Leal Filho, W, Stringer, LC, Totin, E, Djalante, R, Pinho, P, Mach, KJ, Carril, LRF, Birkmann, J, Pandey, R and Wolf, F (2021) Whose voices, whose choices? Pursuing climate resilient trajectories for the poor. *Environmental Science and Policy* 121 18–23. doi: 10.1016/j.envsci.2021.02.018; Castellanos, EJ and Lemos, MF (2021) Central and South America. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. Chapter 12, Final draft; Huq, E and Shafique, T (2023) People move, policies don't: discursive partition against climate-impacted dwellers in urbanizing Bangladesh. *Environment and Urbanization* 35(1) 91–110. doi:10.1177/09562478221149863. / ⁶ Collado, JRN and Wang, HH (2020) Slum upgrading and climate change adaptation and mitigation: Lessons from Latin America, *Cities* 104 102791. doi:10.1016/j.cities.2020.102791. / ⁷ Transformative Urban Coalitions. Urban Labs. <https://urbancoalitions.org/en/urban-labs>

and ensure all actors have access to data and information in appropriate languages and formats. This will enhance participation, enable informed decision making, and help unpack complex social and environmental problems into smaller packages the community can more easily address.

Third, urban labs can foster the co-creation of ideas, social and technical innovation, and collaborative planning among diverse stakeholders across a range of settlements and cities. They promote the integration of scientific and technical knowledge, citizen science, and understanding of norms and regulations, community needs and aspirations, and political territorial context. This enables knowledge sharing and the generation of innovative solutions to address complex urban challenges.

Fourth, integration of climate change into urban upgrading processes complements, rather than compromising or jeopardising, efforts to address basic needs and fulfilment of fundamental rights, and practitioners and communities need more scalable examples to develop and learn from.

Fifth, application of climate action in informal settlements should acknowledge the time, resources (human and financial), training and commitment needed to ensure participation and build a diverse coalition of actors to sustain processes that generate transformation and promote justice.

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