Urban Resilience in Latin America:

A brief guide for city policymakers

Summary

Urban resilience has become a popular catch-all buzzword for a wide variety of policy ideas. The flexibility of the term can both be useful and confusing, especially for local policymakers who need to decide how to implement resilience strategies. This policy brief offers local authorities in Latin America a clearer picture of how to get started in using urban resilience as a framework for urban planning policies. Recommendations include developing local data, engaging the right stakeholders (including those who might resist change), intervening in cities with a strategic, long-term vision, and being open to continuous learning.

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Latin America is simultaneously the most urban region in the world — over 80% of the region lives in cities today[1] — as it is one of the most socially and economically inequitable.[2] The region's future, and even the world's future, depends on the future of cities. As one former mayor of Quito has said, "Sustainable development will be urban, or it will not be."[3] The challenges to sustainable development in Latin America are complex: natural disasters, chronic violence, changing energy needs, poverty, water scarcity, political unrest, air pollution, to name just a few. As academics, policymakers and city dwellers have tried to address these problems and to define what the urban future might look like, urban resilience has emerged as a way forward.

What is urban resilience?

Though "resilience" is a term with a long history of use in engineering, psychology and natural disaster management, most scholars recognize that modern resilience theory has its debut in the field of ecology in the early 1970s. In the four decades since, the term has been applied to a wider and wider range of fields, including risk management, climate change adaptation, international development, energy systems, financial markets, and city planning, among many others.[4] The United Nations, World Bank, Inter-American Development Bank, OECD, universities around the globe and many, many others have set up programs, conducted research, provided financing and built up an industry all around this one term.[5]

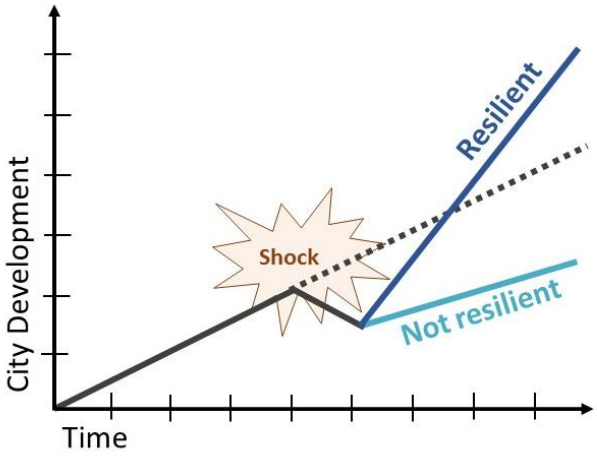
Resilience, like sustainability, has become a catch-all buzzword for a variety of disciplines and policies, resulting in "conceptual fuzziness."[6] In other words, **the term is so ambiguous and flexible that it can mean anything or nothing. This ambiguity can actually be useful:** since resilience is a concept relevant to multiple disciplines, it can bring multiple stakeholders who would otherwise not collaborate to the same table.[7] Because urban systems are so complex,[8] that table has to be as inclusive as possible.

However, the flexibility of resilience can also make it difficult for policymakers to know just how or where to get started.[9] When resilience can mean *anything* or *nothing*, sometimes that is exactly what gets done.

With this is mind, 100 Resilient Cities, a worldwide initiative of the Rockefeller Foundation to support local governments in developing resilience strategies, defines urban resilience as **"the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience."**[10] Chronic stresses are constant or cyclical pressures like unemployment, violence, or food and water shortages, while acute shocks include sudden events like earthquakes, floods and terrorist attacks. These stresses and shocks are often overlapping and interconnected, making the task of responding to them ever more complex.[11]

In sum, **urban resilience is adaptation and transformation**. In the overly-simplistic graph below,[12] we can imagine a city on its predicted development course (in grey), when, suddenly, a shock hits. It could be a hurricane, it could be a

sudden epidemic, it could be anything unexpected that throws off the day-to-day operations of that city.



A non-resilient city (in teal) would be thrown off course entirely by this shock, and its development might be affected negatively for years to come.

A resilient city (in blue), however, would not only bounce back from the shock, but it would become even better than before. It would have the capacities and assets in order to adapt to this shock as well as to transform itself in the long run.

We can think of a city as complex ecosystem with many inputs and outputs and stages of growth, just as we might think of a tree. A tree receives certain known inputs (nutrients and water through its roots, sunlight through its leaves) as well as certain surprise inputs (plagues, disease, storms). As a result, the tree adapts and transforms. It may send out new roots or new branches, it may produce more or less fruit, parts of it may even wither and die, while other parts continue to sprout and flower. Resilience is the ability of this tree to survive and to grow (perhaps in unexpected directions) even in the face of shocks and stresses.

Urban resilience is not any one specific policy or program; **it is a set of capacities and assets**. In other words, urban resilience can be a useful framework for city planning. This framework requires certain elements to make sure it functions appropriately within a given context while still being flexible enough to adapt and transform in response to changing circumstances. Just as a tree needs roots, leaves, bark, nutrients, light and water to survive, cities also require certain characteristics and key inputs in order to become resilient. The elements in the diagram below will be described in more detail in the following section, but the basic idea is that resilience is not one single policy or program, but rather the result of multiple policies, programs, strategies and decisions coming together. Resilience is both a process and an outcome.

This brings us to the objective of this policy brief, which is to help city policymakers break down the overwhelming and often confusing topic of urban resilience into actionable, bite-size chunks. Fundación IDEA — a think tank with presence in Mexico City, Mexico and Bogotá, Colombia — has a focus on Latin America, so this brief emphasizes contextually-relevant recommendations for that region, though many of the ideas put forth can be adapted for other regions as well.

How can local governments in Latin America use the urban resilience framework to design and implement real, on-the-ground city planning policies?

Challenges to urban resilience and recommendations for city policymakers in Latin America

Latin America has often been on the frontline of pushing forward policies on sustainability, climate change and disaster mitigation. Several cities in the region have developed local policies that seek to address the risks associated with climate change: reducing carbon emissions and air pollution, ensuring water availability, planning for changing land use patterns, and exploring alternative energy sources.[13] In June 2016, for example, 149 Latin American mayors signed on to the Compact of Mayors, a global platform for standardized measurement and reporting of emissions and climate risk.[14] There have also been efforts to strengthen disaster response capacity,[15] and even disaster prevention (*See Box A.1*).

However, more nuanced understandings of urban resilience that go beyond climate change and disaster mitigation are less common. Generally speaking, a few models of city planning have taken center stage in the region, including the Barcelona model, which emphasizes upgrading the physical layout of the city through transportation reforms, rehabilitated public spaces and innovative design thinking.[16] For example, the bus rapid transit system, first developed in Curitiba, Brazil and later adopted by many cities all over the region, has become a popular policy choice. Safety in public spaces has also been a common focus of resilience strategies in Latin America, particularly in those cities that suffer from chronic violence.[17] That said, though mobility, public spaces and security have managed to gain a foothold in local resilience debates, other key urban systems (e.g. housing, public finance, public health, food systems, etc.) are largely still being left out of conversation.

What follows is a series of common challenges to the implementation of an urban resilience framework in city planning in Latin America. Each challenge is matched by recommendations for city policymakers in the region. This list is by no means comprehensive, but it can help local authorities and planners take the first steps towards building the right resilience policies for their cities. The recommendations build upon the framework described above, and each corresponding key element is noted in blue above each recommendation.

Challenge A: Resilience must be local

Climate change and resilience responses in Latin America are often "top-down" rather than local, "bottom-up" strategies. Many "resilience" policies in the region continue to focus solely on acute shocks (e.g. natural disasters), and much of the momentum has been "top-down": the agenda has been set by national governments who sign international treaties and make international promises.

This perspective means that other key components of urban resilience (e.g. affordable housing, fair employment, food systems, etc.) are often obscured by climate-change-focused policies. And, when the national government makes most decisions, it also means that bottom-up, local-level needs and priorities are, ironically, not often in the spotlight when it comes to urban resilience.[18] Urban resilience has to be local.

Recommendation A.1: Local knowledge

One-size-does-not-fit-all

Because each city faces different risks and vulnerabilities, each city will have to define its own change pathways. There is no copy-and-paste blueprint for urban resilience: policymakers will have to be open to local experimentation, creativity and innovation. Lessons can be learned from how resilience works (or doesn't work) in other parts of the world, but each city is unique in history, in context and in priorities.

Recommendation A.2: Local knowledge

Ask the right questions

Urban policies are determined by who shapes the agenda, who assigns public funds to what projects, whose resilience is prioritized, and who wins or loses as a result.

When city authorities have to prioritize how to use their limited time, money and resources, they inevitably face difficult decisions that imply important trade-offs. Policymakers should consider (at minimum) the following questions for their urban resilience strategies.[20]

The Five Ws of Urban Resilience[19]		
WHO?	• Who determines what is desirable for a city? • Whose resilience is prioritized? • Who is included (and excluded) from the city?	*Example:* Is the strategy designed for habitants (i.e. who reside within the city limits) and/or for users (i.e. who flow in and out of the city for work, consumption, leisure, etc. but do not reside there)?
WHAT?	• What disturbances should the city be resilient to? • What networks and systems are included (and excluded) in the city? • Is the focus on general or specific resilience?	*Example:* Does the resilience policy consider food production networks (i.e. agricultural land outside the city limits), and if so, how can the policy incorporate shocks to those networks?
WHEN?	• Is the focus on rapid-onset or slow-onset changes? • Is the focus on short-term or long-term resilience? • Is the focus on the resilience of present or future generations?	*Example:* Is the focus on dealing with short-term disruptions (e.g. hurricanes) or long-term stressors (e.g. lack of potable water)?
WHERE?	• Where are the spatial boundaries of the city? • Is the resilience of some areas prioritized over others? • Does building resilience in some areas affect the resilience of other areas?	*Example:* How could investments in redirecting floodwaters in one area affect the water management capacity of another area?
WHY?	• What is the goal of building urban resilience? • What are the underlying motivations for building urban resilience? • Is the focus on process or outcome?	*Example:* Is the interest in urban resilience based on becoming a more competitive city, a more inclusive city, a more efficient city, etc.?

Challenge B: Resilience recognizes risks

Resilience and climate change strategies are often sidelined by city decision-makers in Latin America.[21] The lack of attention to resilience can be attributed to uncertainty around what drives and what prevents risk and disaster, as well as a general perception that climate change is a far off thing that will happen to someone else in some other part of the world in the future.[22]

This has a direct effect on urban resilience as cities will be unprepared for the local effects of climate change, including shocks like increased intensity of hurricanes and chronic stresses like sea level rise. It also means that other kinds of chronic stresses like lack of affordable housing, poverty, public health problems or insecurity are not recognized or addressed as integral parts of urban resilience.

Recommendation B.1: Local knowledge

Know what you are working with

Once you ask the right questions, you will need the right information in order to answer them. There is a need for local data about current and future vulnerabilities, plausible socioeconomic and demographic scenarios and projections, urban impacts of a variety of climate and other hazards, as well as the locations and the populations most at risk.[23] In other words, in order to build resilience, you first have to know your risks.

The lack of local data is not a new problem in Latin America — it has been well documented across a variety of fields. So, assuming that the data may not already exist, city officials should make an effort to generate new data. This does not only have to mean

commissioning costly household surveys or risk atlases. It could also mean working with community groups to map perceived risks and vulnerabilities in specific neighborhoods or coordinating efforts with universities to gather and analyze relevant data points.[24] It could also mean working with existing (albeit less-than-perfect) data sources and public agencies to strengthen their reporting and analysis capabilities. Cities will have to get creative to solve the data problem.

Examples of local data for local resilience	
Potential risk	**Potential data sources**
Lack of access to water	• Surface and ground water mapping and modeling • Rainfall predictions • Household use surveys
Chronic violence	• Crime statistics • Community mapping • Survey of perceptions of insecurity
Earthquakes	• Risk atlas • Mapping land use (especially housing) on fault lines

Challenge C: Resilience needs participation

There is a lack of accountability and effective mechanisms for public participation. Some cities in Latin America have been innovative in incorporating citizen voices into their local agendas, but this is unfortunately the exception to the rule. The lack of local public participation contributes to the silencing of citizen concerns about risk and resilience.[25] It is often those who live the effects of shocks and stresses that know best how to overcome them, and their voices are too often absent from the conversation.

Recommendation C.1: Stakeholder engagement

Don't do it alone

Don't start from scratch. Cities are not blank slates: they are sites of intervention and interaction for a wide variety of stakeholders, including national, regional, and local governments, universities, civil society organizations, neighborhood groups, and so on. In all likelihood, there are already important and interesting initiatives in place that, even if they don't already have "resilience" in their names, can contribute to building more resilient cities. Policymakers should identify these interventions and seek to support them, strengthen them, and scale them up, rather than starting from zero.

Local governments cannot stop climate change or solve public insecurity or handle the aftermath of natural disasters on their own. Research on urban resilience in Latin America shows that coordinated work within the government (both vertically – national-state-local – and horizontally – between different agencies and sectors), with the private sector, and with civil society is the most likely to result in effective responses.[26] Resilience has to be the product of widespread participation.

However, channels for civil society and community participation in policy decisions in Latin America continue to be limited. There are few successful examples in the region that go beyond after-the-fact consultation, though there are some stand-outs like participatory budgeting in Brazil (*See Box A.2).* City authorities should harness the innovative and adaptive capacity of their citizens, and if there are no effective participation mechanisms already in place, now is a good time to get started!

Recommendation C.2: Strategic interventions

Take a pro-poor perspective

As has been noted in much of the research on resilience, the poor will be the most affected by climate change (including natural disasters) even though they have contributed the least to it. In Latin America, climate change has a disproportionate impact on already vulnerable communities, particularly the urban poor who occupy high-risk, informal land and have the least adequate provision of public services and infrastructure.[27] In addition to vulnerability to climate change, the poor also face the greatest risks when it comes to chronic stresses like violence, unemployment, food shortages, etc.

Despite (or perhaps *because of*) a critical lack of infrastructure and investment, the urban poor in the

region have demonstrated a particular "bottom-up" adaptive capacity, developed largely out of need, that could be harnessed by policymakers to learn what works on a local scale.[28] Because of both the particular risks they face as well as their particular innovation in coping strategies and adaptation mechanisms, the urban poor should be prioritized when city officials design resilience strategies.

Questions to identify vulnerabilities and opportunities with a pro-poor perspective[29]

- Who lives or works in the locations most exposed to risks *(e.g. on sites that experience landslides)*?
- Who lives or works in locations lacking infrastructure to reduce risk *(e.g. on sites that have inadequate access to potable water)*?
- Who lacks the knowledge, capacity and opportunities to take immediate and/or long-term measures to limit impacts of these risks *(e.g. to move family or assets before a hurricane hits)*?
- What coping strategies and adaptation mechanisms are already in place that can be supported or scaled up *(e.g. community loan and savings networks)*?

Challenge D: Resilience meets resistance

There is some active resistance to urban resilience in Latin America because of what it might mean for the economic development of the region. Resilience strategies must recognize that the status quo is not working and will not work in the future, which can upset those whose interests lie with that very status quo. For example, the model of economic growth dependent on fossil fuels is threatened by policies that seek to limit and/or replace them.[30] Similarly, car manufacturing companies may not be so pleased with policies that seek to expand non-motorized transport. On a smaller scale, investments in the resilience of one area in a given city might be criticized for not being funneled to another area. Urban resilience, at the end of the day, is a political project, and one that inevitably dredges up competing interests.

Recommendation D.1: Stakeholder engagement

Bring everyone on board

Cities are not static: their physical, social, economic and political environments change over time, sometimes by nature and sometimes by design.[31] Policymakers should take this opportunity to build better, strong, more resilient cities, and not simply reinforce the status quo. However, this kind of change will inevitably create conflict, so cities need to be prepared to face resistance head on. Resilience requires collaboration between all kinds of stakeholders, not just those who jump on board from the very beginning. It will take some work to identify and work with those forces that might resist change, but without a solid foundation of support from multiple stakeholders, no policy will last long.

Furthermore, the private sector can be a key ally in financing innovative projects that otherwise might be prohibitively expensive for the city on its own *(See Box A.3).* City authorities should explore these options and find new partners along the way.

Challenge E: Resilience is not a quick win

Long-term interventions like those needed for urban resilience tend to be less visible and more abstract in comparison with other quick-win policy priorities, particularly from the point of view of politicians seeking reelection. As one study points out, "it is hard to gain votes by pointing out that a disaster did not happen."[32] So, resilience policies are often placed in less powerful agencies within local governments in the region, relegating these important decisions to last place.[33]

Recommendation E.1: Long-term vision

Think big, think small

Cities cannot do everything all at once; they must prioritize interventions. In addition to considering budget constraints, city authorities should think about time horizons and realistic expectations of impact. Undertaking resilience strategies can be a mixed bag of both big-picture strategies and smaller "urban acupuncture." The big and the small are not mutually exclusive—in fact, they can complement each other to great effect. For example, although a short-term intervention to rehabilitate a park in a strategic neighborhood by itself it cannot resolve a

city-wide problem of lack of green space, it can build trust between authorities and citizens in order to pave the way for future efforts. Cities have to balance what to do now with what to do later, based on how these interventions can reinforce each other. Resilience is both slow and fast: there are slow, incremental processes of growth and change in response to chronic stresses, as well as rapid, sudden processes of destruction and reorganization in response to acute shocks.[34] Both small transformations and more complex, long-term transformations will be necessary.

Challenge F: Resilience is complex

The lack of local institutional capacity continues to be an important obstacle. Even if they wanted to make a big mark on resilience policy, city authorities in the region often lack the financial resources, the decision-making power and the institutional capacity to do so.[35] Resilience is complex, and Latin American cities are often simply not equipped to respond to the multiple and reinforcing vulnerabilities and risks they face.

Recommendation F.1: Strategic interventions

Find points of intersection

Cities have to pick strategic points of entry that can attack multiple vulnerabilities at once. For example, improving public transportation in Medellin (including the Metrocable gondola lift system) did not just improve mobility: it also decreased emissions from private vehicles, improved air quality, improved connectivity in the city between poor and wealthy areas, and even contributed to public safety (*See Box A.4*). Targeting interventions to address multiple risks is the most efficient and effective way to use limited resources.

Recommendation F.2: Continuous learning

Learn!

City planning is a limited field: not everything can be planned and not everything can be planned for.[36] Unpredictability and uncertainty about the future require more flexibility and more innovation in how city authorities should think about management and planning.[37]

Some risks simply cannot be known ahead of time, so cities have to be able to react to changing dynamics over time. When something unexpected happens, cities need to be able to turn experience into knowledge, and then turn knowledge into new plans, strategies, politics and protocols.[38] Being open to a continuous learning process is key to long-term resilience.[39]

Conclusion

Urban resilience is both adaptive (*e.g. How do you "bounce back"?*) and transformative (*e.g. How do you become even better?*). It is the capacity of a city to rise from the ashes of a disaster and to find a new way through a chronic problem in order to become an even stronger city. Urban resilience cannot be defined as any one particular policy or program; **urban resilience is a framework of capacities and assets that can help policymakers identify the most pressing risks and vulnerabilities in order to address them in strategic and creative ways.**

Each city faces its own shocks and stresses, so each city must come up with their own, unique resilience plan. This brief can help policymakers get over the initial policy paralysis that often sets in when faced with such complex problems, but what comes next is up to each city to propose, test, innovate and share!

Annex A: Examples of Urban Resilience in Latin America

BOX A.1: FONDEN and the Fund for the Prevention of Natural Disasters in Mexico[40]

Mexico is considered a leader in the field of disaster risk and prevention financing, a key (and often overlooked) component of urban resilience. Founded in 1996, the Fund for Natural Disasters (FONDEN) was established as a budgetary tool to allocate federal funds in response to disasters. Originally, it was only intended to finance post-disaster relief, but in the last 20 years, FONDEN has diversified its financial protection strategies with risk retention and risk transfer instruments, as well as the relatively new Fund for the Prevention of Natural Disasters (FOPREDEN), to cover the pre- and post-disaster periods.

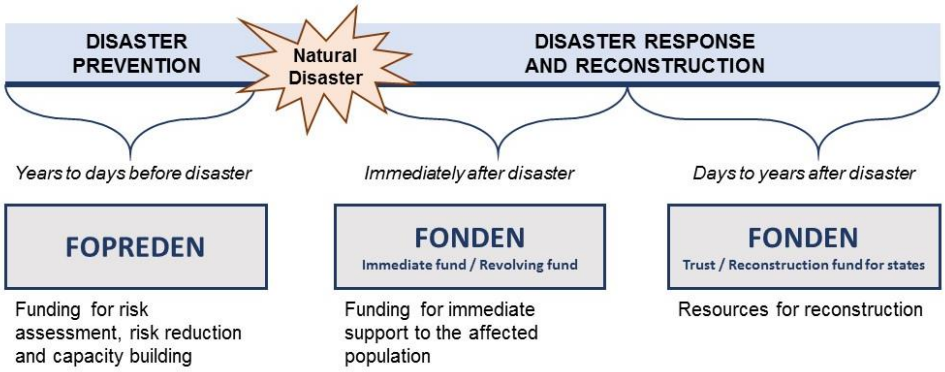


Diagram adapted from Building Urban Resilience: Principles, Tools and Practice, 2013

However, FOPREDEN is underutilized: From its founding in 2004 to 2011, FOPREDEN disbursed the equivalent of only 2% of what FONDEN spent during that period.[41] In other words, despite the existence of a dedicated tool for disaster prevention, Mexico continues to spend much more on disaster response and reconstruction. The need to invest in prevention continues to go unmet.

BOX A.2: Resilience through participatory budgeting in Porto Alegre, Brazil

Porto Alegre, Brazil is famous for pioneering local participatory budgeting, a model that has been adopted by cities around the world since the 1990s. In summary, participatory budgeting offers everyday citizens the chance to decide how municipal funds will be allocated according to their needs and priorities. In January 2016, when Porto Alegre debuted its official resilience strategy, the first of the Latin American cities included in 100 Resilient Cities, no one was surprised to see that participatory budgeting continues to play a central role.[42] In the last few years, the city has proposed that the funds allocated via participatory budgeting go towards resilience infrastructure, including disaster preparedness and resettlement plans.[43] The idea is that local communities know better than anyone what specific needs they have when it comes to preventing floods, or strengthening the housing stock, or dealing with landslides. It is too soon to tell how well participatory budgeting is working for this specific purpose, but all past experience points to the hypothesis that it will serve to create a direct pathway for citizen participation in the key decisions of the city's future.

Photo: Sistema PGLP[44]

BOX A.3: Better public lighting and partnerships in Buenos Aires, Argentina

In 2013, in an ambitious plan to make the move to renewable energy, the city of Buenos Aires embarked upon a plan to switch the majority of their streetlights to remotely-controlled LED bulbs under a public-private partnership with Phillips Lighting.[45] The project involved replacing over 90,000 bulbs with more energy-efficient lighting, thereby becoming one of the cities with the most LED bulbs in their public lighting system in the world.[46] The lights are controlled by a centralized command center that can monitor each bulb and switch them off and on or reduce their lighting intensity, which has led to an important reduction in energy consumption.[47] The complete installation, finished in 2015, replaced 75% of the lighting stock and is estimated to have saved 50% in operational costs for the city,[48] as well as 40-50% of the city's energy usage. The initial investment is expected to be recouped in six to seven years, a benefit of the unique public-private financing structure set up by Buenos Aires in the original public tender, which required a split of the total cost of the project between the city and Phillips Lighting.[49] This project took strong leadership on the part of the city, which prioritized lowering the city's emissions and energy bills, as well as an innovative public financing mechanism. This example shows the power of bringing the private sector on board to make energy-conscious decisions on a scale that, for prohibitive initial investment costs, may have been otherwise out of reach.

Photo: Phillips Lighting[50]

BOX A.4: The multi-faceted resilience of the Metrocable in Medellín, Colombia

Medellín, famous for its makeover from murder capital of the world in the early 1990s to "Most Innovative City of the Year" in 2012, is a favorite case study of urbanists to explain how "social urbanism," or investment in marginalized communities, can transform cities.[51] In 2004, the city installed the first public Metrocable gondola line, designed not only as a means of transportation up and down the steep hills of the valley, but also as a means of shuttling commuters, tourists and investments into poor neighborhoods formerly held hostage by the drug trade. In a sense, the Metrocable is both a tool of *connection* (to bring isolated communities in touch with the rest of the city) and a tool of *disruption* (to break up the drug trade and to break traditional paradigms of urban planning that tend to invest in high-income, tourist-friendly areas). The Metrocable is a public-private intervention that seeks to tackle multiple urban problems in one go: mobility, socioeconomic segregation, public insecurity, lack of economic opportunity.

Photo: Plataforma Urbana[52]

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Fundación IDEA is a premier think tank in Mexico and Latin America. It is a non-profit, nonpartisan organization, whose mission is to design innovative public policies that create equal opportunities for the people of Mexico and Latin America. Fundación IDEA is a reliable source of independent analysis for decision-makers and the general public. For more information, see www.fundacionidea.org.mx

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NOTE:

C230 Consultores, the consulting branch of Fundación IDEA, is a data collection partner with the Urban Institute in a long-term evaluation of the 100 Resilient Cities initiative with the financial support of The Rockefeller Foundation. The information in this discussion is not derived from that work. Please visit the appropriate sites for more information on 100 Resilient Cities or the Urban Institute.

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