

Upgrading Informal Settlements for Climate Resilience



As Africa rapidly urbanizes and climate change accelerates urbanization,¹ the poor, most vulnerable and least culpable are bearing the brunt of the colliding climate and urban infrastructure crises. This collision is taking place where 60 percent of urban Africans — and one billion people worldwide — already live, in urban informal settlements.²

Across Africa, climate resilience³ in informal settlements requires urgent attention. Residents are highly vulnerable to multiple climate hazards like extreme rainfall, floods, water- and vector-borne diseases and extreme heat, fires and water scarcity.⁴ During a heat wave in Nairobi in 2015, for example, informal settlements were 3-5°C hotter than in other parts of the city.⁵

Existing vulnerabilities due to the lack of adequate income and assets, infrastructure, basic services, and voice in governance are further exacerbated by the degradation of ecosystems and habitats and climate change-related disasters and stresses. Informal settlements are particularly vulnerable to climate change due to three underlying factors:

- Their physical location, which is often environmentally fragile.
- The socioeconomic characteristics of residents, including high levels of poverty.
- Political and institutional marginalization, resulting in the absence of risk-reducing infrastructure and support to cope with shocks.⁶

While upgrading is yet to be mainstreamed as climate change adaptation, it is a widely accepted practice in urban governance that can greatly increase the resilience of residents and infrastructure in informal settlements to climate change impacts. Flexible by nature, upgrading adapts well to different local contexts.⁷ As emphasized by the Intergovernmental Panel on Climate Change (IPCC), “urban governments are uniquely situated to reconcile development with climate change adaptation because they understand local contexts, raise local awareness, respond to citizens’ and civil society pressures and work to build an inclusive policy space”.⁸ And as demonstrated by the Mukuru SPA, government and community partnerships are crucial for upgrading informal settlements not just for improving physical infrastructure but for more inclusive, enduring resilience to social drivers of vulnerability.

Social drivers of vulnerability like low-income and gender discrimination intersect with environmental risks. Political exclusion and social vulnerability impair resilience. Because residents in informal settlements are often trapped in clientelist relationships, they struggle to enlist the support needed from local governments for upgrading. Moreover, because they are often viewed as apart from and inferior to the formal city, local governments are often reluctant to engage in the community dialogues and partnerships required to undertake meaningful upgrading projects. This exclusion is embodied by the lack of a registered address for households living in informal settlements. Without an address, residents are often denied access to infrastructure (such as piped water, sanitation, electricity, even

roads) and services (such as public schools, health care, social protection, voter registries, banking, property insurance) crucial for resilience.⁹

Upgrading alone does not ensure inclusion. Inclusion is fundamental to resilience. Just because a local government undertakes upgrading does not ensure that all residents will be engaged, or benefit, equally. Some groups are more vulnerable to climate change impacts than others. It is therefore important to pay particular attention to what may exclude or undercut these groups by asking how does the project:

- protect infants and children?
- address the needs of residents discriminated against on the basis of age, sex, gender, ethnicity or other social group?
- account for tenants who may be excluded by providing land tenure (in particular women who are often disproportionately renters)?¹⁰

Informal settlements often play important roles in their city's economy and therefore to its resilience to disasters and shocks. As demonstrated by research done in Mukuru and elsewhere in Kenya in 2017, informal settlement residents make major contributions to their city's economy. The lack of risk-reducing infrastructure and services in settlements leaves these economies vulnerable to disasters and shocks. Therefore, upgrading builds resilience not only within settlements but for the city more broadly.

While upgrading reduces many climate-related risks, it has limits. Without investments in and integration with risk-reducing infrastructure beyond a settlement's boundaries, residents remain vulnerable to hazards like flooding that originates elsewhere in a watershed. There are also residual risks that inevitably remain even after interventions to address vulnerabilities and reduce risks have been completed.¹¹

Relocation is not viable unless it accounts for affordability, accessibility and quality. It might be tempting to try to relocate residents from informal settlements that are located in environmentally hazardous locations to formal developments that are better served by risk-reducing infrastructure and services. However, many will not want to go if the new location does not offer comparable or better access to employment, affordable housing and services, and tenure security.

For particularly hazardous sites, relocation might be necessary. But the relocation process, in particular decision-making about how it is undertaken and where residents resettle must be done in close collaboration with residents themselves. If the new locations are far from the original

location, distant from employment and services, or have poor quality housing and services, residents will likely opt to move to other informal settlements that better meet their needs.¹²

Look beyond hazards to consider root causes of risk and vulnerability and mainstream risk management into urban development. Upgrading informal settlements can reduce climate vulnerability. The risks faced by urban populations in developing countries, particularly in informal settlements, are associated with poverty, informality, inadequate basic infrastructure, weak governance, and exclusionary planning.¹³ Climate risk management and vulnerability reduction efforts in these cities must therefore look beyond hazards to consider root causes of risk and vulnerability – such as informal settlements in dangerous locations, infrastructure deficits, and unequal access to decision-making, opportunities and resources.

Moreover, risk management and vulnerability reduction efforts should not only be restricted to climate and disaster risk management, but mainstreamed into urban development processes, including planning, policymaking and investments.¹⁴ The IPCC finds that reducing basic service deficits and building resilient infrastructure systems in urban areas can significantly reduce hazard exposure and vulnerability to climate change.¹⁵ This includes water supply, sanitation, storm and wastewater drains, electricity, transport and telecommunications, health care, education, and emergency response. Others have found complementarity between upgrading informal settlements and building climate resilience – effective upgrading can enhance resilience to climate risks and provide a foundation into which climate-change resilience and disaster risk reduction can be integrated.¹⁶

Elevate the role of local governments, community and government partnerships and community ownership in planning and decision-making to create locally-appropriate and enduring investments. Inclusive and locally led planning and governance approaches can improve the effectiveness and sustainability of resilience building efforts. The IPCC emphasizes the key role of urban governments in reconciling development and climate change adaptation; partnerships between local government and communities in upgrading informal settlements; and participatory inclusiveness, equity, awareness raising, deliberation, argument and persuasion in determining the legitimacy and effectiveness of action.¹⁷ It finds that adaptation in urban areas depends on a locally-rooted, iterative process of learning about changing risks and opportunities, identifying and evaluating options, making decisions, and revising strategies in collaboration with a range of actors. Locally led approaches to upgrade informal settlements can ensure broader buy-in and ownership of residents, reflect local needs and aspirations, be tailored to local circumstances, and therefore be more effective and long lasting.

Assessing and anticipating future climate-related risk. While in-situ upgrading where governments work closely with communities is a major improvement over the conventional response of city governments of ignoring or bulldozing informal settlements, these initiatives

often focus on addressing current risks. Although addressing land tenure and existing gaps in infrastructure and service provision can reduce climate vulnerability in informal settlements, more needs to be done to assess and anticipate future climate-related risk.

Climate change poses real risks for cities – with global warming greater than 1.5°C, human death and illness will increase significantly, exacerbated by urban heat islands, intensified heat waves, volatile weather, floods, droughts, coastal inundation and diseases.¹⁸

Planning for future risk can be challenging for local governments and communities alike. Climate change is not always a well-understood concept and seeking to assess residents' perceptions of future risks and planning to anticipate those risks requires new, unconventional ways of thinking, engaging and acting.

Some methods for planning for future risk could include using scenarios to conduct participatory vulnerability and risk assessments (PVRA) with informal settlement residents and co-developing community-led data collection tools to fill large data gaps for environmental hazards in informal settlements (such as the knowledge of residents on water and flooding levels in the past).

Also note that while upgrading mainly addresses vulnerabilities to climate change, it can also be an opportunity to decarbonize development as in-situ upgrading counteracts sprawl.

While considering future risk is becoming increasingly necessary, it is important to weigh it against competing priorities. Funding for upgrading is limited so in some cases it may be necessary to prioritize the immediate needs of residents over uncertain future risks.

Climate change concepts may be unfamiliar to some but social and economic vulnerability will not be. As previously noted, climate change and its impacts are not always well understood by both informal settlement residents and local professionals. This includes the language used to describe climate change and build resilience to address related hazards, vulnerabilities and risks. Upgrading is a widely accepted practice and a practical language has grown with it that is well understood by communities and professionals alike. Instead of learning to speak in the language of international organizations, funders and partners should instead learn how existing practices in informal settlements aid adaptation and resilience. And as upgrading evolves to be more sensitive to climate change, residents and local governments can also learn more about related risks and begin to speak the language of funders and partners.

Key Resources on Building Climate Resilience in Urban Informal Settlements

- The **GUIDES AND METHODS** in this Guide
- **Building Resilience to Climate Change in Informal Settlements**
- **Addressing the Most Vulnerable First – Pro-poor Climate Action in Informal Settlements**

Notes and Sources

1. Earle, L., Aubrey, D., Nuñez Ferrera, I., & Loose, S. (2020). When Internal Displacement Meets Urbanisation: Making Cities Work for Internally Displaced People. *Refugee Survey Quarterly*, 39(4), 494–506.
2. Lall, S. V., Henderson, J. V., & Venables, A. J. (2017). *Africa's Cities: Opening Doors to the World*. World Bank.
3. Resilience is defined by the IPCC as the ability of a system and its component parts to anticipate, absorb, accommodate, or recover from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions
4. Urban climate-change-related risks include “rising sea levels and storm surges, heat stress, extreme precipitation, inland and coastal flooding, landslides, drought, increased aridity, water scarcity, and air pollution with widespread negative impacts on people (and their health, livelihoods, and assets) and on local and national economies and ecosystems.” (Revi et al., 2014, p. 538)
5. 2.8-5.6°C or 5-10°F (Scott, A. A., Misiani, H., Okoth, J., Jordan, A., Gohlke, J., Ouma, G., Arrighi, J., Zaitchik, B. F., Jjemba, E., Verjee, S., & Waugh, D. W. (2017). Temperature and heat in informal settlements in Nairobi. *PLoS One*, 12(11), e0187300.)
6. Dodman, D., Archer, D., & Mayr, M. (2018). *Addressing the Most Vulnerable First – Pro-poor Climate Action in Informal Settlements*. UN Human Settlements Programme (UN-Habitat).
7. Satterthwaite, D., Archer, D., Colenbrander, S., Dodman, D., Hardoy, J., Mitlin, D., & Patel, S. (2020). Building Resilience to Climate Change in Informal Settlements. *One Earth*, 2(2), 143–156.
8. Revi, A., Satterthwaite, D. E., Aragón-Durand, F., Corfee-Morlot, J., Kiunsi, R. B. R., Pelling, M., Roberts, D. C., & Solecki, W. (2014). *Urban Areas*. In: *Climate Change 2014 – Impacts, Adaptation and Vulnerability: Part A: Global and Sectoral Aspects: Volume 1, Global and Sectoral Aspects: Working Group II Contribution to the IPCC Fifth Assessment Report*. Cambridge University Press.
9. Satterthwaite, D., Archer, D., Colenbrander, S., Dodman, D., Hardoy, J., Mitlin, D., & Patel, S. (2020). Building Resilience to Climate Change in Informal Settlements. *One Earth*, 2(2), 143–156.
10. Satterthwaite, D., Archer, D., Colenbrander, S., Dodman, D., Hardoy, J., Mitlin, D., & Patel, S. (2020). Building Resilience to Climate Change in Informal Settlements. *One Earth*, 2(2), 143–156.
11. Satterthwaite, D., Archer, D., Colenbrander, S., Dodman, D., Hardoy, J., Mitlin, D., & Patel, S. (2020). Building Resilience to Climate Change in Informal Settlements. *One Earth*, 2(2), 143–156.
12. Satterthwaite, D., Archer, D., Colenbrander, S., Dodman, D., Hardoy, J., Mitlin, D., & Patel, S. (2020). Building Resilience to Climate Change in Informal Settlements. *One Earth*, 2(2), 143–156.
13. UN-Habitat. (2020). *Breaking Cycles of Risk Accumulation in African Cities*. United Nations Human Settlements Programme (UN-Habitat).
14. UN-Habitat. (2020). *Breaking Cycles of Risk Accumulation in African Cities*. United Nations Human Settlements Programme (UN-Habitat).
15. Revi, A., Satterthwaite, D. E., Aragón-Durand, F., Corfee-Morlot, J., Kiunsi, R. B. R., Pelling, M., Roberts, D. C., & Solecki, W. (2014). *Urban Areas*. In: *Climate Change 2014 – Impacts, Adaptation and Vulnerability: Part A: Global and Sectoral Aspects: Volume 1, Global and Sectoral Aspects: Working Group II Contribution to the IPCC Fifth Assessment Report*. Cambridge University Press.
16. Satterthwaite, D., Archer, D., Colenbrander, S., Dodman, D., Hardoy, J., Mitlin, D., & Patel, S. (2020). Building Resilience to Climate Change in Informal Settlements. *One Earth*, 2(2), 143–156.
17. Satterthwaite, D., Archer, D., Colenbrander, S., Dodman, D., Hardoy, J., Mitlin, D., & Patel, S. (2020). Building Resilience to Climate Change in Informal Settlements. *One Earth*, 2(2), 143–156.
18. Satterthwaite, D., Archer, D., Colenbrander, S., Dodman, D., Hardoy, J., Mitlin, D., & Patel, S. (2020). Building Resilience to Climate Change in Informal Settlements. *One Earth*, 2(2), 143–156.