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EXPERT NOTE

Multilevel action for community-led climate resilience in informal settlements

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Summary

Informal settlements are home to over a billion people and are among the communities most exposed to the impacts of climate change. Yet they are often left out of climate plans and funding decisions (Satterthwaite et al. 2020). In fact, over the past two decades, only a tiny sliver (3.5 percent) of global climate finance has reached the urban poor (Cities Alliance 2024a). This deepens their vulnerability and misses a major opportunity to support low-carbon, resilient development (C40 Cities and WRI 2020; French et al. 2020).

For climate action to be just and effective, informal settlements cannot be left on the sidelines and must instead be part of the solution. This expert note highlights how transforming them is vital to achieving national and global climate goals and how including them in planning can drive more just, resilient, and low-carbon development. It argues that slum transformation must be part of climate and urban development strategies, and that climate finance must reach those living and working in informal settlements. The expert note describes the benefits of prioritizing municipal infrastructure for neglected communities; reducing carbon lock-in (Dodman et al. 2022; Mahendra et al. 2021); and coordinating government actions, vertically and horizontally, so policies and plans can work together rather than against each other. It also stresses the need to engage meaningfully with residents so they can help shape solutions.

Opportunities for action are highlighted within international climate and development processes under the United Nations Framework Convention on Climate Change (UNFCCC), the 30th Conference of the Parties (COP30) Action Agenda, and the Urban 20, alongside deliberations at the World Urban Forum and over what will succeed the UN 2030 Agenda for Sustainable Development (post-2030 agenda). This expert note draws on existing World Resources Institute research and action, which includes work with partners through initiatives such as Resilient, Equitable Housing, Opportunities, and Urban Services (REHOUSE) and the Coalition for High Ambition Multilevel Partnerships (CHAMP).

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Expert notes provide timely, focused, and concise information for urgent challenges, based on expert perspectives.

Informal settlements are central to climate action and equitable economic development

Over a billion people in the Global South live in informal settlements, sometimes called slums. Informality takes many forms and is shaped by diverse political, social, and economic dynamics.[1] In some contexts, governments or other actors may even have incentives to keep these settlements informal and underserviced.[2]

In many cities in developing countries, informal settlements house a large share of the labor force driving both the formal and informal local economy (Satterthwaite et al. 2018). Residents often fill gaps in formal services, such as delivering their own transportation, waste management, water, and sanitation. But their communities are vulnerable to overlapping climate risks, including extreme heat, flooding, landslides, and inadequate infrastructure stressed by climate change (Reckien et al. 2025; UN-Habitat 2025). Many informal settlements are sites of innovation and community-led resilience. Despite scant resources, residents have organized initiatives to upgrade infrastructure, protect or restore the environment, and develop emergency response systems, acting as climate first responders (Mahendra et al. 2021; REHOUSE n.d.).

Yet these communities remain excluded from policy processes across all levels of government (Behailu and Seo 2025). This creates a blind spot, leading to missed opportunities for climate change mitigation[3] and adaptation, economic development, and climate justice (Kundu 2019). Leaving informal settlements out of national climate agendas carries high costs: it increases climate vulnerability and, in a rapidly urbanizing Global South, can lock cities into sprawling, carbon-intensive, haphazard, and environmentally destructive development (Birkmann et al. 2022). Without adequate, affordable, well-serviced housing, communities may resort to practices that destroy nature, consume fossil fuels, and multiply mitigation and adaptation challenges. People settle on unserviced urban peripheries, riverbanks, steep slopes, or tidal basins, imperiled by climate hazards and cut off from opportunities to improve their lives. Rural-to-urban migration can exacerbate these dangers and costs as many migrants fleeing climate impacts end up in high-risk informal settlements.

Interventions to improve informal settlements could advance climate-resilient, environmentally sustainable development, while doing much to improve residents' lives. For instance, affordable public transport offers better access to jobs and opportunities and reduces congestion, carbon dioxide emissions, and harmful air pollution. Urban design that incorporates green spaces, trees, cool roofs, and other nature-based solutions improves thermal comfort while curbing emissions as well (Nutkiewicz et al. 2022). The Intergovernmental Panel on Climate Change (Dodman et al. 2022) points out that prioritizing climate finance that benefits low-income residents, including those in informal settlements, delivers the greatest gains in well-being by improving both resilience and quality of life.

Informal settlements are neglected for a host of reasons. Sometimes national policies are not aligned with local and regional spatial planning, and sometimes national policies and development plans themselves treat informal settlements as temporary or illegal, or they marginalize cities altogether. National policies rarely prioritize housing or slum transformation or include disaggregated data on settlement location, risk exposure, or service needs. This limits the ability of cities and utilities to design responsive interventions (HFHI 2024). Financing mechanisms, both domestic and international, often bypass cities altogether or come with rigid eligibility requirements that exclude informal areas or community groups. In the past two decades, only 3.5 percent of global climate finance has reached the urban poor (Cities Alliance 2024a).

From diagnosis to remedies

Unlocking the climate potential of informal settlements requires both vertical and horizontal coordination between agencies across all levels of government responsible for housing, planning, infrastructure, health, environment, and climate. Success will also hinge on meaningful engagement with residents and genuine inclusion of community voices (Mahendra et al. 2021).

Integrating vertically

National governments play a central role by setting policy, aligning regulations, and mobilizing data and finance to support city and community action. National policies, such as nationally determined contributions (NDCs), national adaptation plans (NAPs), and urban infrastructure plans, can enable vertical alignment[4] through legal mandates, regulatory reforms, and funding allocations. These can support pro-poor land management and informal settlement upgrading, guide and mandate inclusive and integrated urban planning, and provide cross-sectoral policy tools that align climate objectives with spatial, economic, and social goals (Mahendra et al. 2021).

Brazil's Periferia Viva, for example, provides guidance, collaboration, information, funds, and technical assistance to help communities upgrade informal settlements and advance climate justice. It offers peer-to-peer support through a nationwide community of practice that shares knowledge, funding, and ideas about how to overcome obstacles (Ministry of Cities 2025b). Brazil's NDC revision also pledges to implement climate federalism[5] to deepen coordination between local and national climate action (Federative Republic of Brazil 2024).

Innovative policies can also flow from the bottom up, beginning locally and forming the basis for national policy. Thailand's Baan Mankong program began in Bangkok as a municipal policy to upgrade informal settlements, making them safer, more resilient, and better for families. Between 2003 and 2016, it expanded to support almost 2,000 community-led initiatives in 345 cities (King et al. 2017). Residents benefited from improved dwellings and avoided being displaced to distant peripheries far from jobs. National and local governments, civil society, and academic institutions collaborated to make it happen.

Coordinating horizontally

Confronting challenges that transcend boundaries—such as air pollution, climate change, water-related risks, and urban expansion—also requires horizontal coordination across sectors at the same level of government. Regulations, processes, and structures need to incentivize coordination so that different agencies and jurisdictions are not working at cross purposes. Integrated spatial planning needs to embed both mitigation and adaptation into regional and urban development. This planning should acknowledge informal settlements and their key role in providing essential labor, services, and housing (Mahendra et al. 2021).

Coordinated land use and transport planning has helped Curitiba, Brazil; Medellín, Colombia; and Ahmedabad, India, integrate formal housing with public transportation services, a key transformative solution for achieving citywide mitigation and adaptation goals. By working across sectors, rather than planning in silos, these cities have been able to use land more efficiently and provide the transportation that residents need to access jobs and other services (Dodman et al. 2022).

The benefits of and need for horizontal coordination, across municipal departments and between politicians and technocrats, also emerged in a sanitation upgrade project at the Murray informal settlement in Cape Town, South Africa. Nongovernmental organizations (NGOs) played a critical role—bridging gaps between the city and community actors—and ward councillors mediated differences between different sectoral departments. This community-driven project, tied to a broader climate adaptation agenda, also highlighted the importance of participatory codesign (Peirson and Ziervogel 2021).

Following the community and promoting participation

In cities across Africa, Asia, and Latin America, community-led informal settlement upgrades have produced more equitable and effective results than top-down approaches (Terdoo 2024). Tapping into residents' knowledge and experience has yielded tangible improvements in sanitation, drainage, and housing layout (King et al. 2017), as well as flood mitigation, more resilient infrastructure, and reduced emissions from burning fossil fuels and waste (Ono and Adrien 2024). Participatory planning methods, including focus and steering groups, community dialogues, and results mapping, tailor actions to the community's needs. They strengthen social cohesion and community ownership in ways that tokenistic or top-down methods do not (Dodman et al. 2022)

The Know Your City platform by Slum Dwellers International (SDI) exemplifies the power of community engagement to fill gaps in official data, strengthen climate adaptation, and ensure that those who live with the problems can lead solutions (SDI 2025). SDI promotes safer, climate-resilient housing through its community-driven mapping. It has trained communities on gathering data from over 7,000 informal settlements in more than 16 countries to present disaggregated, community-based numbers reflecting socioeconomic realities on the ground (King et al. 2017; SDI n.d.). This helps communities, NGOs, and small businesses understand opportunities and gaps, advocate for better services and infrastructure, and highlight climate challenges. By providing geographically specific information, this data can target interventions where they are needed most (Sharma et al. 2024). As SDI's web page states, "Slum upgrading is climate adaptation—from the ground up" (SDI 2025). The Roof Over Our Heads campaign, another community-based effort, documents which building techniques and roofing materials work best for those living in self-built informal housing.

An innovative, community-led approach also helped rebuild Iloilo, Philippines, after a 2008 typhoon destroyed many homes. The government worked with a range of NGOs to empower local communities to design and finance their own resilient housing projects. The city contributed land, and NGOs helped organize savings groups and participatory planning processes for building climate-resilient housing (WRI Ross Center Prize for Cities 2022). In Ahmedabad, India, similar cooperation between the NGO Mahila Housing Trust and the city empowered women to work together to develop low-cost, effective climate responses that residents wanted and needed: white paint on rooftops, rainwater harvesting systems, and climate risk insurance if local temperature thresholds were exceeded for two consecutive days. The NGO also helped women provide input into the city's Heat Action Plan and successfully collect evidence showing why the city should provide better services (WRI Ross Center Prize for Cities 2021).

Elevating informal settlements through global governance

Informal settlements can be integrated into development and financial initiatives, global governance, UNFCCC processes and mechanisms, and Sustainable Development Goals (SDGs).

During the previous NDC cycle (2020–25), only 16 NDCs mentioned informal settlements directly, and these said little about housing or basic service provision (Tollin et al. 2024). This is a missed opportunity because NDCs can provide a platform for national governments to formally recognize informal settlements as both a site of vulnerability and a source of climate action. NDCs create political visibility and accountability while also linking local realities with global commitments such as the Paris Agreement. They can guide climate investments and, for developing countries, open pathways to international climate finance (HFHI 2024).

The Global Stocktake (GST) offers an opportunity to assess inclusive climate progress and highlight local innovations. The first GST highlighted the importance of more inclusive adaptation, but it failed to directly reference informal settlements (UNFCCC 2023a), even though many informal settlements are situated in climate-vulnerable locations prone to flooding, landslides, and heat stress (Broyles 2024).

Finally, while informality is acknowledged in global frameworks such as the SDGs, the New Urban Agenda, and the Sendai Framework for Disaster Risk Reduction, references to informality are often indirect, limited in scope, or subsumed under broader categories. The distinct challenges and opportunities of informality remain underrepresented. The 2023 United Nations Habitat Assembly took important steps toward addressing this gap through Resolution 2/7 on housing, which established the Open-Ended Working Group on Housing, and Resolution 2/2 on slum transformation. However, the momentum behind slum transformation appears to be faltering, partly due to varying levels of political support among member states (Rossbach 2025; UN-Habitat 2023).

Leveraging international climate finance

To succeed, international climate finance will need to be combined with a range of domestic and local financial mechanisms, including more flexible fiscal transfers and targeted subsidies that focus on vulnerable communities (HFHI 2024; UNU-EHS and MCII 2024). Land value capture and public-private partnerships will need to be scaled up to deliver climate-resilient infrastructure and services. Prioritizing the most vulnerable is central to the loss and damage agenda, and this should include those in high-risk informal settlements.

Policy implications and recommendations

It is not possible to promote climate justice in urban areas without prioritizing informal settlements. This means incorporating informality explicitly into global and national climate commitments and embedding it within local implementation frameworks (Table 1 and Figure 1).

TABLE 1 | Policy implications and recommendations

INTEGRATING VERTICALLY
▪ National and subnational governments should align policies (such as the nationally determined contribution [NDC], national adaptation plan, and national urban infrastructure plans), funding, and data systems and create legal and institutional frameworks that link grassroots action with national goals.
COORDINATING HORIZONTALLY
▪ Governments should coordinate across sectors—aligning urban and climate planning with housing, transport, economic development, and environmental policies—while recognizing informality to deliver integrated, climate resilient urban development.
COMMUNITY-LED ACTION
▪ All levels of government should institutionalize community-led improvements in informal settlements, creating formal mechanisms for using residents' data, knowledge, and priorities to shape climate and urban policies, resource allocation, and infrastructure delivery.
GLOBAL GOVERNANCE
▪ Future NDCs should explicitly include targets and actions for upgrading informal settlements, securing tenure, and improving basic services, aligned with broader housing, climate, and development goals. ▪ Future Global Stocktakes should explicitly include informal settlements, include targeted reporting where feasible, and support community-led adaptation and upgrading efforts. ▪ Future international climate and development processes, including the post-2030 agenda, should formally recognize informal settlements as integral to the housing continuum and as priority areas for climate action and investment. ▪ The 2026 World Urban Forum, themed "Housing the World: Safe and Resilient Cities and Communities," should be used to strengthen the links between the housing and resilience agendas while ensuring that informal settlements remain central to global urban discussions at this forum and beyond.
INTERNATIONAL CLIMATE FINANCE
▪ Climate finance strategies should direct resources to locally appropriate solutions in high-risk areas, including upgrading housing and infrastructure; protecting access to livelihoods and services; and supporting dignified, voluntary relocation where absolutely necessary. Funding mechanisms should also identify and address risk hot spots and improve understanding of how people move from hazard to hazard to ensure investments effectively reduce vulnerability and build long-term resilience.

Source: Authors.

FIGURE 1 | Climate and development benefits of upgraded informal settlements

1) Smaller lot sizes and mid-rise buildings with open community spaces help facilitate higher density, affordability, and livability in cities, and can provide a wide range of housing possibilities.

2) Rooftop solar or **3) connections to the electricity grid** can improve the productivity and living conditions of residents, along with preventing the use of carbon intensive and/or costly fuel.

Safe, reliable, less polluting, and affordable mobility can facilitate access to jobs and opportunities.

This can be done with **4) public transit access** and **5) safer streets for pedestrians, cyclists and integrating informal transit.**

Improving **6) waste management** and expanding access to services such as **7) access to clean water and managed sanitation** can lead to healthier environments and communities.

Overall, a stronger community resulting from upgrading and improvements can kick off a virtuous cycle of continuous transformation.

Source: Mahendra et al. 2021.

Conclusion

Informal settlements must play a central role in global efforts to confront the worst impacts of climate change. This will require innovative solutions and purposeful collaboration guided by inclusive national visions, rooted in local knowledge, and aligned with the global commitment to leave no one behind. Sustained financial resources, from both domestic budgets and international donors, will be needed as well. Aligning global governance systems, national climate strategies, and local plans—and listening to communities on the front lines of the climate crisis—can drive meaningful, on-the-ground impact where it is needed most.

Abbreviations

COP	Conference of the Parties
GST	Global Stocktake
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NGO	Nongovernmental Organization
SDG	Sustainable Development Goal
SDI	Slum Dwellers International
UNFCCC	United Nations Framework Convention on Climate Change

Endnotes

1. Informality takes many forms and is a symptom of the unavailability of affordable land and housing in growing cities. Self-built settlements emerge rapidly with poor-quality housing and limited services, yet they often house families for generations.
2. By maintaining informality, authorities can avoid the obligation to provide public services and infrastructure while simultaneously using residents' dependency to secure political support during elections. Although a full exploration of these dynamics is beyond the scope of this expert note, it is important to recognize them to avoid oversimplifying the challenge.
3. While informal settlements contribute only a small portion of global greenhouse gas emissions, residents still stand to benefit from the financial savings, economic opportunities and improved health outcomes associated with low-carbon development.
4. *Vertical alignment* refers to national, state, and local government aligning their objectives, plans, and funding so that actions at each level of government reinforce one another.
5. In Brazil, *climate federalism* refers to the shared and coordinated responsibility among federal, state, and municipal governments to design and implement climate policies.

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