

<b>Institution:</b> University College London		
<b>Unit of Assessment:</b> 13-Architecture, Built Environment and Planning		
<b>Title of case study:</b> Cities beyond risk: Disrupting risk accumulation through enhanced local capacities across the Global South		
<b>Period when the underpinning research was undertaken:</b> 2014-2017		
<b>Details of staff conducting the underpinning research from the submitting unit:</b>		
<b>Name(s):</b>	<b>Role(s) (e.g. job title):</b>	<b>Period(s) employed by submitting HEI:</b>
Adriana Allen	Professor of Development Planning and Urban Sustainability	1997-present
Cassidy Johnson	Professor of Urbanism and Disaster Risk Reduction	2006-present
Rita Lambert	Senior Teaching Fellow	2010-present
<b>Period when the claimed impact occurred:</b> 2014-2020		
<b>Is this case study continued from a case study submitted in 2014? Y</b>		
<b>1. Summary of the impact</b>		
<p>Research partnerships led by The Bartlett Development Planning Unit (DPU) with local communities and policy makers have enabled Lima (Peru), Karonga (Malawi) and Freetown (Sierra Leone) to develop inclusive governance instruments such as: participatory-risk-mapping, localised data-based decision-making and community area action planning methodologies capable of delivering more equitable, sustainable and climate resilient outcomes.</p> <p>Directly, the research has delivered methodological and policy changes, such that local communities and policymakers are able to challenge prevailing insular and reactive responses to urban risk accumulation cycles. Indirectly, it has influenced health and environmental protection practices and inclusive governance, and is informing key stakeholders working on just and resilient urbanisation in the Global South.</p>		
<b>2. Underpinning research</b>		
<p>United Nations Sustainable Development Goal (SDG) 11 aims to make cities 'inclusive, safe, resilient and sustainable', reflecting the importance of urbanisation in the global development agenda. The challenges in achieving this goal are concentrated in the Global South, where the majority of the world's future urban growth is set to occur, but where capacity to plan urban growth, promote equitable development, provide risk-reducing infrastructure, and adapt to weather-related hazards is often lacking, resulting in risk accumulation cycles or urban 'risk traps'. Frequently invisible and neglected in the management and planning of cities, 'risk traps' are the combined outcome of daily health hazards (such as poor access to water and sanitation or unsafe food chains) and small-scale episodic but frequent threats (such as localised floods and fires), coupled with a lack of capacity to prevent these risks. Led by DPU in collaboration with overseas partners, three research projects have shed light on how 'risk traps' work and can be disrupted, delivering innovative governance instruments to advance more equitable, sustainable and climate-resilient urbanisation in Africa and Latin America.</p>		
<b>ReMapLima and cLIMA sin Riesgo</b>		
<p>Led by Allen and Lambert these research projects focused on two risk-prone areas in Lima (Peru) inhabited by highly vulnerable low-income groups: Barrios Altos (BA) in the historic centre and José Carlos Mariátegui (JCM) at the edge of the city. This work developed an innovative participatory methodology, that combines open-source geographic information systems (GIS) and point cloud drone-mapping technologies for community-led mapping and visualization to guide risk-preventing action [b]. Findings demonstrated that more inclusive evidence and representations help to break risk traps and build the capacity of local communities and leaders, municipalities and high-level decision-makers (e.g. Peru's Congress, UNESCO and Ministry of Culture in Lima, Peru) to act [b, d]. The outputs produced advanced new instruments to co-produce spatially and socially grounded knowledge for the planning of just urban futures [c].</p> <p>This research further examined the risk-mitigating investment and actions of state agencies, residents and communities in these two locations. The analysis showed that residents are caught in risk traps not because of a lack of investment, but despite those investments and also due to their unintended effects [d]. Furthermore, fragmented investments perpetuate risk</p>		

accumulation cycles and erode the ability to prevent them. This work argued for re-assessing risk-mitigation investments – such as institutional and neighbourhood upgrade interventions across the centre and periphery of Lima – to better account for their unintended consequences that exacerbate building collapse & environment deterioration, flooding, food and water insecurity and rates of infectious diseases [d].

#### Urban Africa Risk Knowledge (Urban ARK)

In collaboration with Professor Pelling at King's College London and working in two cities in Sub-Saharan Africa – Freetown (Sierra Leone) and Karonga (Malawi) – Urban ARK explored the drivers of risk accumulation over time. Allen and Johnson led the Work Package on 'Governance, Planning and Urban Development', further evaluating the resilience-seeking practices and resources deployed to mitigate, prevent and reduce risk. It concluded that the ability of existing Disaster Risk Management (DRM) efforts to disrupt urban risk traps, largely depends on their capacity to do so in an inclusive and relational way [a]. The research confirmed that risk accumulation can be effectively reduced and prevented by acknowledging existing practices and by enabling collective action among the urban poor, customary authorities, local governments and external agencies [e].

Across the three projects, working with local communities in Lima, Freetown and Karonga, the DPU team and partners used drones, 3D modelling and open-source mapping technologies to co-produce quantitative and qualitative spatialised data through 'ReMapRisk'. This enabled local stakeholders: residents, community organisations (e.g. Sierra Leone Federation of the Urban and Rural Poor (FEDURP), municipalities (e.g. Freetown City Council), researchers (e.g. Sierra Leone Urban Research Centre (SLURC), Mzuzu University) and NGOs (e.g. CIDAP, CENCA) to map and assess under-reported risk accumulation in informal settlements. Mapping helped to expose the everyday and episodic hazards faced by poor women and men, where these are located, and how they are produced [e, f].

Drawing together socio-economic and environmental factors to analyse systemic risk traps and the responses available to tackle them, the 'ReMapRisk' tool allows a systematic understanding of how risk is socially and geographically distributed. Users can interrogate the platform to guide actions and monitor changes. The tool helps local communities and policymakers to better understand the everyday risks and episodic hazards faced by the urban poor by visualising key risk trends. The tool enables these groups to identify, prioritise and invest in strategic risk reduction and prevention measures [f]. The application of ReMapRisk was extended to other cities through public events held in Lima (May 2016), Quito (October 2016), London (2016), Cape Town (January 2018), Freetown and Karonga (July 2018). UCL's work has since expanded to Beira (Mozambique), and Mwanza and Dar es Salaam (Tanzania) through two major research awards totalling over GBP9,000,000 from the Global Challenges Research Fund for the projects: Knowledge in Action for Urban Equality (KNOW) and OVERDUE: Tackling the Sanitation Taboo across African Cities.

### 3. References to the research (indicative maximum of six references)

- a) Adelekan, I, Johnson, C, Manda, M, Matyas, D, Mberu, B U, Parnell, S, Pelling M, Satterthwaite, D and Vivekananda, J (2015). Disaster risk and its reduction: an agenda for urban Africa. *International Development Planning Review*. Vol. 37 (1): 33–43. [doi:10.3828/idpr.2015.4](https://doi.org/10.3828/idpr.2015.4)
- b) Lambert R and Allen, A (2016). "Participatory Mapping to Disrupt Unjust Urban Trajectories in Lima." In Imperatore, P. (ed.) *Geospatial Technology - Environmental and Social Applications*. InTech, Chapter 6, 143-165. <http://www.intechopen.com/books/geospatial-technology-environmental-and-social-applications/participatory-mapping-to-disrupt-unjust-urban-trajectories-in-Lima>
- c) Allen, A, Griffin, L and Johnson, C (Eds.) (2017). *Environmental Justice and Urban Resilience in the Global South*. New York: Palgrave MacMillan US. ISBN 978-1-137-47354-7.
- d) Allen, A, Zilbert Soto, L, Wesely, J in collaboration with Belkow, T, Ferro, V, Lambert, R, Langdown, I, and Samanamú, A (2017). From state agencies to ordinary citizens: reframing risk-mitigation investments and their impact to disrupt urban risk traps in Lima, Peru. *Environment and Urbanization*. Vol.29(2): 477-502. [www.journals.sagepub.com/doi/abs/10.1177/0956247817706061](http://www.journals.sagepub.com/doi/abs/10.1177/0956247817706061)

- e) Allen, A, Koroma, B, Manda, M, Osuteye, E and Lambert, R (2020). "Urban risk readdressed: Bridging resilience-seeking practices in African cities." In: Burayidi, M A, Allen, A, Twigg, J, Wamsler, C (eds.) *The Routledge Handbook of Urban Resilience*. London: Routledge. Chapter 25, 331-348.
- f) Allen, A, Osuteye, E, Koroma, B and Lambert, R (2020). "Unlocking urban risk trajectories in Freetown's informal settlements." In: Pelling, M (ed.) [Breaking Cycles of Risk Accumulation in African Cities](#). Nairobi: UN-Habitat. Chapter 7, pp. 54-61.

#### Research projects:

[i] **ReMapLima: Mapping Beyond the Palimpsest**. Funded by Bartlett Materialisation Grant. Dates: February 2014-2016. Grant value: GBP50,000.

[ii] **cLima sin Riesgo: Disrupting urban 'risk traps'**. *Bridging finance and knowledge for climate resilient infrastructure planning in Lima, Peru*. Project references: RSGL-1201 and RSGL-1201a. Dates: February 2015-April 2017. Grant value: GBP391,112.

[iii] **Urban Africa Risk Knowledge (Urban ARK): Breaking cycles of risk accumulation in Sub-Saharan Africa**. Funded by ESRC. Dates: January 2015-January 2019. Grant total value: GBP3,329,186; DPU component GBP471,997.

#### 4. Details of the impact

This research had a significant impact on strategic plans and actions for Disaster Risk Reduction (DRR) - a systematic approach to identifying, assessing and reducing the risks of disaster - building capacity to better deal with 'risk traps', and challenging fragmented and exclusionary city governance practices. The research has: generated georeferenced risk data used to design and implement community-led projects benefitting over 200,000 people in the three cities; produced actionable knowledge to reframe public debates and policy-making; and established robust community capacities and networks, such as District Disaster Risk Management Committees (DRMC) and new governance tools. The importance of the environmental and social benefits of this work is indicated in local communities' improved access to basic services, adequate shelter and protective infrastructures, and the enhanced risk-preventing capacities of communities and policy-makers through innovative governance instruments.

##### 4.1 Community-led mapping adopted and translated into innovative actions

ReMapLima [b, d, e, f] was adopted in 15 neighbourhoods in high-risk areas in the centre (BA) and periphery (JCM) of Metropolitan Lima [1]. During the COVID19 pandemic, local authorities and communities used ReMapLima to identify the most vulnerable groups and to target health and food emergency support to those most at risk, through a body of community-appointed 'local guardians' [2]. In Karonga, the ReMapRisk platform covers the entire town, informing the work of four DRMCs formally recognized by the Government of Malawi [5D]. In Freetown, 15 out of the 60 informal settlements in high-risk areas were surveyed and established community-based DRMC [4A, 4C, 4E]. In both Freetown and Karonga, the DRMCs established through Urban ARK represent the most decentralised governance structures dealing with risk reduction and prevention with systematic inputs from local communities. The enhanced capacities of these pioneering structures extend to other settlements. As a Senior Researcher at Mzuzu University explains: "a very important aspect that we are experiencing [is that] community members are being asked by the local government to assist in building capacity in other settlements within the city" [5D].

In all three cities, the adopted mapping and risk monitoring systems translated into community projects as a direct outcome of cLIMA sin Riesgo and Urban ARK. In Lima, this included 13 community-led innovative projects and six fully implemented actions [1, 6C]. Among other goals achieved, these projects: reduced young adults' vulnerability by developing safe public areas in the historic centre [1C, 1D, 1E]; established a *bio-huerta* through a local school, implementing organic allotments and piloting vermiculture technologies to tackle food insecurity; and devised a social housing scheme to densify consolidated areas and reduce the occupation of high risk-prone areas in JCM [1B]. A community leader in BA indicates that mapping techniques allowed residents to "discover the number of buildings that were constructed without licences, without plans, in an arbitrary way and the impacts they have in increased evictions affecting many plots and neighbours" [1D]. Co-funded by local communities and local governmental programmes these actions benefited 700 households (c. 3,500 people) and c. 2,200 primary school students

involved in the *bio-huerta*, ameliorating local living conditions, while catching the attention of local authorities and policy-makers as flagship examples of how transformative change can be achieved collaboratively, and at scale [1B, 6C]. Local residents testify to the importance of the support from cLIMA sin Riesgo, indicating that it “saved our Quinta, where we suffered from terrible humidity and where we were afraid that dwellings we inhabit would collapse. [The action project] saved us from the humidity, changes to the sewerage system were made thanks to the architects and the support we had through them, and some neighbours” [1E].

Under Urban ARK, community-based action planning underpinned by both the new evidence gathered and newly-built led to five strategic risk-reduction and prevention projects - four implemented in Karonga and a fifth in Mzuzu (Malawi) - and 14 strategic action projects in Freetown (Sierra Leone) [7]. These projects benefited c. 72,000 people in Karonga/Mzuzu [7C], significantly reducing the risks of waterborne diseases, such as cholera, and making potable water accessible to local communities [5A, 5B, 5C]. This includes the creation of a new water kiosk, which is cited by a local resident and kiosk manager as life-changing: “Now we drink clean water and there is no more sickness. We are now able to concentrate on housework, we can now do our businesses and when coming back we don’t stress anymore because water is now close” [5A]. Another local manager of the kiosk further highlights this benefit: “Cholera was rampant here because we lacked clean water sources and now because people access clean water, cholera is history and there has not been a single case this year” [5C].

In Freetown, c. 140,000 dwellers in informal settlements benefited from risk-preventing measures to confront flooding, landslides and housing collapse, upgraded drainage and sewage infrastructure [4B]. Initiatives also tackled the encroachment of coastal areas; consequently preserving environmentally protected mangrove wetlands recognised by the Ramsar Convention [4C, 4D]. The involved communities have since continued their efforts to reinvest in risk-prevention upgrade projects by extending the construction of retaining walls [4B].

#### 4.2 New governance mechanisms and attitudinal change in policy-making

The actionable knowledge produced by DPU helped to reframe public debates, public funding and policy-making, and created new alliances [d, e]. Institutionally recognised DRR observatories and community-led DRMC were established in the three cities. These led to strategic, vigorous and concerted actions to disrupt urban risk traps in all three cities. DRR Observatories are virtual platforms set up by cLIMA sin Riesgo and Urban ARK to share evidence on risk trends and enable abridged collective action among the urban poor, customary authorities, local governments and external agencies [d, e].

In Lima, cLIMA sin Riesgo set up three DRR Observatories. The Metropolitan DRR Observatory enabled a wide range of institutional actors to drive policy change, prompting the creation of an Urban Risk Observatory in the Peruvian National Congress in 2017 (Congress Act No. 2483). This promotes new directives and funding to articulate DRR and urban development in Peruvian cities, and as the Director Foro Ciudades para la Vida and Senior Advisor to the Peruvian National Congress indicates, has contributed to the decision “to finally update the urban development plan of the city” [1A]. The DRR Observatory in Lima’s historic centre signed an official agreement with municipal and ministerial entities and UNESCO to reduce and prevent risks through ongoing efforts on heritage preservation and regeneration [1C, 3]. The DRR Observatory in the periphery of the city has expanded its work to monitor the activities of land trafficking mafias driving the occupation of high-risk prone areas [1B].

Through Urban ARK, DPU researchers also built a long-lasting legacy to promote and sustain risk-prevention policies and strategic planning across various institutional domains. In Karonga, the DRMCs established by the project have been adopted as a model to decentralise DRR across Malawi [5A]. In Sierra Leone, the Freetown City Council has recognised the DRR Action-Learning Hub (hosted by the Sierra Leone Urban Research Centre, SLURC), and Urban ARK findings and strategic interventions are guiding the environmental and urban planning component of *Transform Freetown* (led by SLURC), a city-wide strategy promoted by the Mayor to tackle structural vulnerabilities and risk accumulation across the city. Citing the research on risk, the Mayor of Freetown testifies that “a fundamental challenge that the city faces is unplanned urbanisation. So there's a direct alignment with the focus of this research work and our agenda” [4A]. This includes creating Community Area Action Plans for informal settlements to incorporate local voices in Freetown Local Area Plans and National Urban Policy [4E]. Also

as a direct result of the research, a Memorandum of Understanding (MoU) has been established between coastal communities and the National Protected Area Agency (NPAA) to preserve mangrove areas and prevent the encroachment of land towards the sea along the coast of western Freetown [4C]. The Chairman of FEDURP and Community Leader of Dwozark settlement testifies to how Urban ARK work has taught communities that solving flooding “is not only about the amount of money [provided], it is about the amount of collaboration, the impact participation, and our people are involved in solving the problem within the community” [4B].

The underpinning research has also provided key evidence to drive policy and attitudinal change, opening debate on issues of heritage conservation, relocation and climate-change adaptation between residents and decision-makers [a, b, d, e]. Public dissemination of findings and insights has been extensive (numerous television, radio and print media features) [8], together with engagements in high-level international fora (Habitat III Conference, Quito 2016; IPCC Cities and Climate Change Conference, Edmonton 2018 and Adaptation Futures, 2018).

The information technology, infrastructure, resources and expertise developed in the localities through the participatory mapping process in the *cLima sin Riesgo* and *Urban ARK* projects remains as a legacy to stimulate and support future action and research. Circa 240 direct beneficiaries were trained by the Urban ARK team on similar capacities in Karonga and Freetown [7A, 7B]. Further, building on Urban ARK, a free *Massive Online Open Course (MOOC) on Urban Risk in African Cities* has been developed as part of a set of capacity-building resources on Development and Planning in African Cities; reaching almost 6,000 learners from 114 countries across Africa and internationally, and building critical professional skills.

Overall, the research has created a solid legacy to instigate locally relevant and socially sensitive risk-reduction and climate-adaptation investments at various scales to support strategic community-led action across the urban Global South now and into the future.

#### 5. Sources to corroborate the impact (indicative maximum of 10 references)

##### 1. Testimonial video Part 1: Lima, Peru. Interviews with:

- A. Director Foro Ciudades para la Vida and Senior Advisor to the Peruvian National Congress
- B. Senior researcher at Instituto CENCA & former Director Lima Metropolitan Planning Institute
- C. Local Architect engaged in the Heritage Preservation Programme of BA
- D. Male community leader in Lima’s historic centre
- E. Female community leader in Lima’s historic centre.

##### 2. MISEREOR (2020) [Local struggles urbanization and environmental degradation](#) Case 5: Peru

##### 3. UNESCO Peru Press Release <https://bit.ly/3wI5ABE>

##### 4. Testimonial video Part 2: Freetown, Sierra Leone. Interviews with:

- A. Mayor of Freetown
- B. Chairman Sierra Leone Federation of the Urban & Rural Poor (FEDURP)
- C. Research Director SLURC
- D. Research Officer SLURC
- E. Director for Planning Policy and Project Development at the Ministry of Lands, Country Planning and Environment of Sierra Leone

##### 5. Testimonial video Part 3: Karonga Malawi. Interviews with:

- A. Female resident of Mwazembe, water kiosk manager Karonga district
- B. Research Community Counterpart in Mwahimba NDRMC
- C. Female resident of Mwawembe, Karonga district
- D. Senior Researcher at Mzuzu University

##### 6. Strategic Intervention Projects Lima supported by cLIMA sin Riesgo

- A. WP3-Policy Brief 2
- B. WP4-Policy Brief 3
- C. WP5-Policy Brief 4

##### 7. Strategic Intervention Projects in Freetown and Karonga, supported by Urban ARK

- A. Urban risk in Freetown’s informal settlements: making the invisible visible
- B. Strategic Action Planning: Transformative change in Karonga, Malawi & Freetown, Sierra Leone
- C. Understanding everyday and disaster risks in Karonga Town, Malawi

##### 8. Selection of media coverage on projects and impacts