



ISSUE 63 April 2018
dpunews

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On climate change, risk and relocation

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Climate change brings a particular set of challenges for cities in the global south. The people most affected are the poor living in hazard-exposed locations or areas with inadequate provision for basic services. Resettlement from high-risk areas has been considered a possible disaster risk reduction strategy in response to increased natural hazard risks and disasters brought on by urbanisation and climate change (Correa et al. 2011). However, as this piece will argue, the implementation of resettlement is rarely successful because more often than not it occurs in a top-down manner that fails to consider people's view of risks and how these are interwoven with people's values and daily needs. Disaster risks need to be considered as intrinsic to everyday life. Recent DPU research on urban risk and relocation has looked at these issues and put into practice bottom-up methods of defining risk and risk mitigation strategies.

Climate change is expected to impact on people living in urban areas in various ways, and compounds the already existing problem of urban risk. The term 'urban risk' covers a wide spectrum of risks that are created through the process of urbanisation – the concentration of people and assets in places that are vulnerable to hazards. Risks are usually not uniform across a city; they are concentrated specifically in areas exposed to natural hazards such as steep slopes and flood plains, and in neighbourhoods lacking adequate infrastructure and services. Research shows that losses from the big intensive disaster events, such as earthquakes and volcanic eruptions, are actually eclipsed by the losses from smaller or 'everyday' events, such as urban flooding, fires, traffic accidents, pollution, eviction and ill health from water and foodborne illnesses (United Nations, 2015). The impacts of climate change come on top of the already existing disasters that many people in cities face.

Whilst cities in high-income nations are more able to manage the effects of climate change, cities in many middle and low-income nations have very large infrastructure deficits that make hazards and climate change much more difficult to withstand. Climate change can bring

heavier rainfall that can contribute to flash flooding, higher water tables and landslides in places where there is inadequate drainage infrastructure. Droughts can make water scarcer and more expensive. Sea level rise can permanently inundate once habitable areas. Wind patterns are changing and, in some places, becoming more intense. These impacts can lead to both intensive and smaller-scale disasters.

For most people, disasters are not the greatest threat, but rather an amplification of their daily struggles. People live with 'tolerable risks' to maximise the benefits of a certain location. The poorest live in areas exposed to hazards not by choice, but because they are balancing the need for shelter against that for livelihood or employment opportunities, and the threat of a disaster may not be the highest priority. At some point there may be a tipping point—maybe a disaster—that urges people to move of their own volition, or their circumstances change so that they no longer need to 'tolerate the risks.'

For example, in the Msasani and Mtambani neighbourhoods of Dar es Salaam, Tanzania, DPU research showed that community members identify crime and poor solid waste management as being the greatest risks, even though they live in areas highly prone to flooding (Ndeze, 2017). In Karonga, a small urban centre in Northern Malawi, community members identify hunger, floods, disease/epidemics and drought as the greatest risks (Manda and Wanda, 2017). The Bwaise and Natete neighbourhoods in Kampala, Uganda, based in the low-laying wetlands of the city, are highly flood-prone. People tolerate the almost daily occurrence of flooding during the rainy season because they have security of tenure in these areas, and life is also affordable. However, it doesn't mean that people wouldn't want to move if they had the means. One family, who had lived with the flooding for many years, finally reached a tipping point when the mother fell down in a torrent of water, and almost drowned. They moved to a new location for a couple of years, but eventually came back and rebuilt their house on higher foundations, because the rent elsewhere was

too expensive (Johnson et al, 2016).

As these examples illustrate, the manner in which risk is defined, and by whom, has a bearing on decisions about how to approach risk mitigation. Risk is essentially a subjective concept and the threshold of tolerable risk varies by circumstance. Research suggests that individuals accept a certain level of risk in their lives as necessary to avail themselves of certain benefits; benefit and risk have a directly proportional relationship: the higher the benefit/need, the more willing individuals will be to accept risk. Individuals take calculated risks based on the amount of information they have and their experiences in similar situations.

Simply put, risk is indicated by the equation Risk = Hazard x Vulnerability/ Capacity to act. But who decides the threshold of risk that is too great to bear? What methodology do authorities use in their calculations in situations of potential resettlement? There are two specific elements at play here, one is around power, and which people or organisations have the power to make decisions or take action, and secondly, how those in power measure or perceive risk.

Legal and policy frameworks are important elements in how governments define and act on risks. Acceptability of societal risks has long been quantified when it comes to engineering and geoscience practices, such as dam safety, flood hazards, or nuclear power plants. Each country defines its own set of risk acceptability, such as the UK's National Risk Register of Civil Emergencies, based on scientific evidence and expert knowledge. The insurance industry routinely calculates risk to provide coverage for their clients while earning a profit (Nalla, 2017).

When it comes to coping with natural hazards and the impacts of climate change on those living in informal settlements, planning authorities and related government agencies are too often seeking to reduce disaster risks by moving people, typically after a disaster, from hazard-exposed locations. Many international funding agencies as well as national and local governments simplistically assume

Right: Settlement adjacent to Kintom landfill site, Freetown. Photo by E. Osuteye.

resettlement is a stand-alone tool for disaster risk management, an approach aided by legal and policy frameworks. For example, the concept of ‘un-mitigable risk areas’ in Colombia and Peru and ‘untenable’ areas in India, present visions of risk based on specific methodologies that are acted on by local level institutional actors. The data used for such decisions offers a limited view of risk and the risk mitigation options available. It underestimates adaptation strategies adopted by people living in hazard-prone areas. These laws are rigid, and often place too much power in the hands of the few (Jain et al., 2017).

In Peru, new laws² enable the regional and national governments to declare ‘un-mitigable’ risk areas. A ‘high un-mitigable risk’ area is defined as “a zone where the probability exists that the population and its livelihoods will suffer damage and loss because of the impact of events and where the implementation of mitigation measures leads to greater costs and complexity than relocating housing and urban infrastructure” (in Lavell, 2015).

The methodology for defining un-mitigable risk is a calculation of the probability of natural hazards in a specific area based on frequency and magnitude, as well the vulnerability of people and structures, defined by exposure, fragility and resilience. There are parameters built into the methodology that defines the levels of high risk, medium risk and low risk, but the ultimate value depends on the calculation made by the assessor and experts. The final decision about whether to resettle people is taken by the authorities, and does not directly include perspectives of the people who are to be resettled (Caceras, 2017). The recent nature of all these measures and criteria makes it impossible to judge their efficacy at present. But, what is known is that the law assumes that the population is in agreement with being resettled, which may not be the case (Lavell, 2015). The law states that only prioritised populations who don’t have the means to move by themselves and who do not own any other



property would be part of an organised resettlement, but it is not clear what happens when someone does not want to take part in the process, or what options non-poor inhabitants have, such as those in Belén, Peru, who have protested against their resettlement (Caceres, 2017).

In India, ‘un-tenable’ is a term often used to justify moving people from areas deemed to be hazardous. According to the guidelines of the Rajiv Awas Yojana (RAY) slum improvement programme, “Untenable slums/vacant lands will be only those which are a ‘safety’ or ‘health hazard’ to the inhabitants or their neighbourhoods, even if redeveloped. Such untenable sites or portions will be earmarked for

relocation to other redevelopment/vacant sites, preferably within the same zone.” Un-tenable slums are those considered to be located on major storm water or other drains, railway lines, to impede major transport alignment, the beds of rivers or water bodies, or to exist in other hazardous or objectionable areas, including in close proximity to high tension lines. However, it is argued that a robust methodology for measuring tenability is not universally applied, although suggestions for such a methodology have been developed.³ As low-income households build dwellings and settlements over time, in-situ upgrading is often rejected by public authorities arguing that the community is ‘untenable’ not

because of any hazard but because they do not adhere to the minimum development control norms or service level benchmarks (Bhan, Anand & Harish, 2014). Yet, our research shows that people who have lived in locations that have been deemed 'untenable', for more than 5 years, tend to develop adaptation strategies to deal with those risks (Jain, 2016). The relocation of such settlements should be avoided at all costs as it tends to increase the socio-economic burden on people as well as the city at large.

For example, research by the Indian Institute for Human Settlements looked at Sevanagar Madhurvada, a slum settlement located on railway land in Visakhapatnam, Andhra Pradesh. The Railways needed the land and accepted the help of the Greater Visakhapatnam Municipal Corporation (GVMC) to evict the residents on the pretext of hazard reduction and 'untenable' status. Despite the legal battles between the residents and the Railways and GVMC, the area has now been developed as a railway stadium. The residents were relocated more than 25 km northward to Madhurvada, where there is limited access to physical, economic or social services. The difficult outcomes of the eviction are being felt deeply by the residents. While they are facing greater everyday challenges and also periodic major events, including the cyclone

Below: Building collapse due to strong winds, Karonga, Malawi. Photo by D. Brown.

Hudhud in 2014, they have not received aid or government help, which was available in the past in their previous location (Jain, 2016).

Methodologies do exist that make residents' own views of risk central to decision-making about resettlement. For example, in 2013 a team from the University of Leuven looked at people's preferences for resettlement from the unstable slopes of Mount Elgon, in eastern Uganda. This is an area where Uganda's first disaster-induced resettlement scheme was implemented in 2011 after a major landslide. The people were resettled in Kiryandongo, several hundred kilometres away, but many returned to their homes of origin because there was no basic infrastructure, access to public health and safety or opportunities to establish livelihoods in the new settlement. Vlaeminck's (2016) research showed that the conditions offered for resettlement could make a big difference in people's decision-making. For example, preference for relocation from landslide areas unsurprisingly tends to be greater for residents located in the steepest slope/highest risk areas, when the compensation to be given is greater (due to a larger land area), or if the location of resettlement is within the same district, rather than far away.

Our research in Kampala, Uganda posited that one's values have a good deal to do with how one sees staying or moving (Marx et al., 2016). We identified that people's decisions to remain living in

Kampala's low-lying wetland areas, which are prone to daily flooding during the rainy season, are based on their considerations of the costs of flood risk, mediated by the opportunities that living in that location provide, as well as the 'values' that they place on those opportunities. 'Value' is broader than financial measures, and therefore is difficult to measure using top-down methodologies. For example, a dwelling is simultaneously a place of security, an asset, a place to work from, and/or a drain on resources to maintain. Values change over time. For example, a parcel of land can change value because people convert it from a commodity to an inheritance – something that they purchased becomes a gift. In such a case, while the 'market value' has not gone away, the value of the land is understood within a different set of norms, expectations, obligations and relationships and affects what can and cannot be done with the land. Viewed in this way, people's decisions about relocation are based on a complex set of values that go well beyond hazard, vulnerability and resilience.

DPU staff have been involved in a number of research projects working on community-driven visions of risk. From our perspective, if those people who bear the burden of risk have a say in identifying those risks and the levels that they are willing to tolerate against other trade-offs, and have the means to communicate this to policymakers, this leads to a more just



evaluation than alternative calculations. We see a stronger community-led risk view as key to improving policy outcomes. It is the people who need to be identifying the risks they face, and working together to act on these.

To this end, Adriana Allen and Rita Lambert have developed the *ReMap Risk* methodology and applied it in Lima, Peru as part of the *CLima Sin Riesgo* project, and in Freetown, Sierra Leone and Karonga, Malawi, as part of the Urban ARK project. Cassidy Johnson and Emmanuel Osuteye have partnered with the Centre for Community Initiatives and Ardhi University in Dar es Salaam, Tanzania, to work with two communities to identify the risks they face, to develop action plans and to enter into a dialogue with local authorities about addressing their needs, based on the 'Action at the Frontline' methodology, in the AXA project.

At the end of our project *Reducing Relocation Risks*, we held a multi-stakeholder workshop in Quito with communities facing eviction, policymakers involved in resettlement and researchers. The statement issued from participants in this workshop summarises well the arguments (Jain et al, 2017).

Due to urbanisation processes, poverty conditions, and climate change, the potential numbers of people living in areas exposed to risk is increasing. Relocation and resettlement are last-resort options; the priority is making safe land available for low-income populations, minimising new development on hazard-prone lands, and the integration of current and future risks into development, land use and urban planning. This will reduce risks in the future.

Considering the high numbers of forced evictions in which risk exposure is used as a pretext to move people out and to destroy their property, there is a need for national safety-net policies and procedures that are enforced and monitored. These policies and procedures need to protect people's rights, and to ensure that due and just processes are followed.

Analysing disasters, urban risk and climate change cannot be separated from examining everyday life; these must be understood within the broader patterns of society. If one looks solely at risk mitigation, then resettlement may seem a good option. But given the choice, people will rarely choose this resettlement. Risk

is a subjective concept and will be defined differently across sectors of society and science. Deciding on how to mitigate risks from disaster and climate change requires a collective understanding of the values that different people have and the current and future hazards in particular places. Better information on the risks people face, and how the people affected see these risks is needed, through bottom-up ways of communicating risk. Science also has an important role to play, as there is a need to communicate the biggest threats, now and in the future. Landslides, flash floods, and worsening conditions from climate change may alter how residents see the problem.

- 1 This article draws on research undertaken by a large team, including those that have contributed to the Reducing Relocation Risks project: Allan Lavell, Garima Jain, Colin Marx, Shuaib Lwasa, Jose Carceres, Vineetha Nalla, and Charlotte Barrow.
- 2 <http://www.cenepred.gob.pe/web/download/DS.%20115-2013%20Rgto%20Reasentamiento.pdf>
- 3 <https://counterview.org/2015/04/22/most-of-the-slums-can-be-considered-tenable-and-hence-must-be-taken-up-for-in-situ-upgradation/>

NOTE:

This article draws on research from a number of DPU-led projects:

- Reducing Relocation Risks with partners Indian Institute for Human Settlements, Latin American Social Science Faculty - FLACSO, and Makerere University, Uganda (www.ucl.ac.uk/bartlett/development/reducing-relocation-risk-urban-areas)
- Metrics for Policy Action in Urban Areas: Characterizing Risks Facing Low-income Groups (www.axa-research.org/en/projects/cassidy-johnson)
- Urban Africa Risk Knowledge (Urban ARK) (www.urbanark.org)
- Clima Sin Riesgo (<https://climasinriesgo.net/>)

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