

## The full spectrum of risk in urban centres: changing perceptions, changing priorities

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**SUMMARY:** Cities can be among the world's most healthy places – if all their residents have access to risk-reducing infrastructure and services that are affordable and of good quality. These include piped water, sanitation, drainage, household waste collection, electricity, health care and emergency services. Where these are not provided, cities concentrate so many risks. But the huge scale of premature death, illness, injury and impoverishment that these risks contribute to remains hidden because these are not recorded and not even seen as outcomes of risk by many. How can the scale and relative importance of all risks – from everyday hazards to small and large disasters – be assessed and then acted on? This Brief describes the spectrum of risks in urban areas and highlights those that are poorly documented and whose impacts are underestimated. It also highlights measures that can be taken to address this.

### I. INTRODUCTION

In many urban centres in the global South, there is little or no information on either the scale or the causes of premature death, serious injury, illness or impoverishment. In sub-Saharan Africa, this is the case for most urban centres. Even where there may be some information, it is seldom available for every urban centre or district. We get some sense of the scale of these issues from household surveys (such as the Demographic and Health Surveys), which show very high infant, child and maternal mortality rates, but only as averages for nations' urban populations.<sup>(1)</sup> For practical action this kind of information is needed for each urban centre and each urban ward or district – on what the problems are, where they are and who is most impacted.

Civil servants, politicians and civil society groups working at neighbourhood, ward, district and city levels may have some sense, based on their experience, of what the concerns are within their jurisdictions. But without data to present to higher-ups, it can be difficult to get proper action in response. The availability of data is worst of all for informal settlements – despite the fact that in the global South, they often house more than half of a city's population. In Nairobi, the African Population and Health Research Center (APHRC) has shown that aggregate figures for infant and under-5 mortality rates for the city hide the much higher rates in informal settlements.<sup>(2)</sup>

### II. URBAN RISK

The Intergovernmental Panel on Climate Change's Fifth Assessment noted that "*risk is often represented as probability of occurrence of hazardous events or trends multiplied by the impacts if these events or trends occur. Risk results from the interaction of vulnerability, exposure and hazard.*"<sup>(3)</sup>

Understanding the full spectrum of risk in urban areas means understanding all the risks that can impoverish, injure, sicken or kill urban populations. If we unpack this, we can see that it also means understanding the probability of hazardous events occurring (whether the outbreak of an infectious disease or an extreme weather event), the likely consequences for vulnerable groups, and the actual outcomes of past risks.

But there are so many different risks, each with particular impacts on health or incomes, assets and/or livelihoods. There is also the wide spectrum of hazards and hazard classifications, and the wide spectrum of vulnerable urban groups, residents and workers, that may be especially susceptible to particular hazards, or less able to cope with or avoid them. Infants and young children, for example, are so vulnerable to diarrhoea from contaminated food or water. Out of this comes the need to determine who faces the greatest life- and health-threatening risks from each of the three categories of (large) disasters, small disasters and everyday hazards – whether in their

1. Mitlin, Diana and David Satterthwaite (2013), *Urban Poverty in the Global South: Scale and Nature*, Routledge, London.

2. APHRC (2002), *Population and Health Dynamics in Nairobi's Informal Settlements*, African Population and Health Research Center, Nairobi, 256 pages; also APHRC (2014), *Population and Health Dynamics in Nairobi's Informal Settlements: Report of the Nairobi Cross-sectional Slums Survey* (NCSS) 2012, African Population and Health Research Center, Nairobi, 187 pages.

3. IPCC (2014), "Summary for policymakers", in C B Field, V R Barros, D J Dokken, K J Mach, M D Mastrandrea, T E Billir, M Chatterjee, K L Ebi, Y O Estrada, R C Genova, B Girma, E S Kissel, A N Levy, S MacCracken, P R Mastrandrea and L L White (editors), *Climate Change 2014: Impacts, Adaptation, and Vulnerability, Part A: Global and Sectoral Aspects*, Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, UK and New York, NY, page 5.

4. See for instance <http://www.cred.be/>.

5. Bull-Kamanga, Liseli, Kade Diagne, Allan Lavell, Fred Lerise, Helen MacGregor, Andrew Maskrey, Manoris Meshack, Mark Pelling, Hannah Reid, David Satterthwaite, Jacob Songso, Ken Westgate and Andre Yitambe (2003), "From everyday hazards to disasters: the accumulation of risk in urban areas", *Environment and Urbanization* Vol 15, No 1, pages 193–204.

6. United Nations (2009), *Global Assessment Report on Disaster Risk Reduction: Risk and Poverty in a Changing Climate*, United Nations Office for Disaster Risk Reduction, Geneva, 207 pages; also Allen, Adriana, Linda Zilbert Soto and Julia Wesely, in collaboration with Teresa Belkow, Vladimir Ferro, Rita Lambert, Ian Langdown and Amaru Samanamú (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, No 2. This will be available in print in October 2017 and on OnlineFirst before then, at <http://journals.sagepub.com/toc/eau/0/0>.

7. This is not really a new concern; the World Health Organization (WHO) in the 1980s had a special programme looking at urban health issues in the global South and a strong interest in public and environmental health.

8. Sverdlík, Alice (2011), "Ill-health and poverty: a literature review on health in informal settlements", *Environment and Urbanization*, Vol 23, No 1, pages 123–156; also Ezech, Alex, Oyiniola Oyebo, David Satterthwaite, Yen-Fu Chen, Robert Ndugwa, Jo Sartori, Blessing Mberu, G J Melendez-Torres, Tilahun Haregu, Samuel I Watson, Waleska Caiaffa, Anthony Capon and Richard J Lilford (2016), "The health of people who live in slums 1: The history, geography, and sociology of slums and the health problems of people who live in slums", *The Lancet*, available at [http://dx.doi.org/10.1016/S0140-6736\(16\)31650-6](http://dx.doi.org/10.1016/S0140-6736(16)31650-6); and Lilford, Richard J, Oyiniola Oyebo, David Satterthwaite, G J Melendez-Torres, Yen-Fu Chen, Blessing Mberu, Samuel I Watson, Jo Sartori, Robert Ndugwa, Waleska Caiaffa, Tilahun Haregu, Anthony Capon, Ruhi Saith and Alex Ezech (2016), "The health of people who live in slums 2: Improving the health and welfare of people who live in slums", *The Lancet*, available at [http://dx.doi.org/10.1016/S0140-6736\(16\)31848-7](http://dx.doi.org/10.1016/S0140-6736(16)31848-7).

9. See reference 6, Allen et al. (2017).

homes, at work, in their neighbourhoods or in the wider city. All of this is necessary to provide the basis for investing in what can be termed "**risk-reducing**" **infrastructure** (like piped water that is safe, sufficient and affordable; good-quality sanitation and electricity; all-weather access roads; drains and street lighting) and **risk-reducing services** (including hospitals/health care, emergency services, road traffic management and the rule of law).

There has been a recognition from the early 1980s that a growing proportion of the urban population in the global South lived in informal settlements on land sites at high risk from floods and/or landslides. This led to an interest in disaster-related risks – and to learning from the disaster risk specialists who at that time began looking in depth at all the "small and localised disaster events" in particular cities, showing that so many of these, with their huge cumulative impacts, were not included in global datasets on disasters.<sup>(4)</sup> In urban areas, the impacts of many of these "small" disasters were concentrated in informal settlements.

Urban development specialists began to draw on the work and methods of disaster risk specialists and to wonder where what might be termed "everyday risk" would fit into this classification of risk.<sup>(5)</sup> Everyday risks are the kinds of risks that vulnerable groups are constantly exposed to in their homes, workplaces and the wider city, including a wide range of disease-causing agents or their vectors (as in dengue and malaria), chemical pollutants (including indoor and outdoor air pollution) and physical hazards (including burns, cuts, scalds, traffic accidents and violence). Wondering about where these kinds of risks fit in generated some questions: What is the difference between an everyday risk and a disaster risk? When does an "everyday risk" become a "disaster risk"? And how does the sum of all the everyday risks influence the capacity of individuals and households to cope with and adapt to disasters?<sup>(6)</sup>

More recently, there has been the challenge of trying to understand the changes in hazards and exposure to hazards that climate change is bringing, will bring or might bring. This will include small and large disasters as well as the deaths, injuries, illnesses and losses that are not considered disasters. And even more recently,<sup>(7)</sup> a focus on understanding the health issues facing those living in informal settlements, and the scale and nature there of premature death, illness and injury,<sup>(8)</sup> has heightened the interest in everyday risks, as well as in small and large disaster risks. There has long been a recognition of the importance of land-use management in and around cities for disaster risk reduction, especially around reducing flood risk. Now, risk-reducing land-use management must be added to risk-reducing infrastructure and services as a key responsibility of urban governments.

### III. VULNERABLE GROUPS

An individual or household is said to be vulnerable to a hazard if they are more susceptible to being killed or harmed (including livelihood, income or asset loss) and if they have less capacity to cope and adapt. It is now obligatory within UN declarations, discussions and recommendations to make special mention of "vulnerable groups" and then often to list them – as in the Sustainable Development Goals (SDGs) and the New Urban Agenda. But rarely do the UN texts go beyond these lists to ask why these are vulnerable groups and what is needed to reduce or manage their vulnerability. It is not so much vulnerable groups that are at issue, but particular groups that are vulnerable to specific risks.

The key issue is not just identifying the risks but how to reduce or remove them. Provision to people's homes of safe, sufficient, regular, affordable water and sanitation and an effective, easily accessed health care system enormously reduce the risks of premature death and ill health; there is no "vulnerable group" if the risk that they are vulnerable to is removed. Case studies show us how place-based policies and programmes need to respond to each settlement's context-specific characteristics, thus identifying who is vulnerable, where they live, what kinds of hazards they are vulnerable to and why – and what capacity they have to act.<sup>(9)</sup>

### IV. UNDERSTANDING THE FULL SPECTRUM OF RISK

Making sense of all the causes of risks and their health outcomes in any urban centre, or settlement within an urban centre, has to consider so many factors – from global to national to local, from economic to social and political. These are often discussed within the literature on the "social determinants" of health even though many of the determinants are actually economic or political.

It is possible to consider "everyday" risks, risks from small and large disasters, and climate change impacts using the same metrics – premature death, illness and injury, damage to or destruction of homes and assets. Everything that has impoverished, harmed or killed an individual or individuals in a city can in theory be documented. This evidence can guide policy and implementation, especially for the city or municipal governments that are responsible for providing most risk-reducing infrastructure and services.

The United Nations Office for Disaster Risk Reduction (UNISDR) makes the distinction between “intensive” and “extensive” disasters. Intensive disasters are the high-intensity events where at least 30 persons are killed and/or at least 600 houses are destroyed. Extensive disasters are those with impacts below these two thresholds. Drawing on data from over 80 countries, UNISDR analyses show the importance of extensive disaster risk both in terms of impact (e.g. mortality, injury and economic losses) and in terms of what drives it. What remains unclear is exactly which premature deaths extensive risk covers. The flood that kills one person *may* be included, but the infection that kills the three-year-old child is not. Premature deaths from physical hazards (such as traffic accidents, fires, floods, crime) usually get picked up in analyses of small disasters, but not premature death from diseases. However, while endemic infectious and parasitic diseases count as everyday risks, epidemics would be classified as disasters. It can be confusing to broaden the discussion of large and small disaster risks to include everyday risks, but as this Brief seeks to highlight, it changes the way that risk is understood and measured.

Distinctions between different categories of risk are based not only on the scale of their potential impact but on the frequency of their outcomes. Small disasters usually have a higher frequency than large disasters – seasonal flooding for instance. In some cities, however, large disasters have also become more frequent in recent decades. Everyday risks are distinct in the sense that they are present in homes, neighbourhoods and the wider city and pose a constant “everyday” threat to residents. So heavy rainfall or heatwaves would not be included, but contaminated water sources would be, at least among those households that lack either the knowledge or capacity to treat this water.

Not every risk fits easily into the above categories. For instance, indoor and outdoor air pollution are *not* considered disasters although their contribution to premature death in many highly polluted cities might meet the criteria set for a disaster, especially for particular periods when air pollution levels are very high.

Most papers on urban risk focus on part of the risk spectrum. Perhaps this is because of the difficulties in documenting health risks. There is a substantial literature on risk in relation to livelihoods and to disasters, but far less on everyday (mostly preventable) health burdens. There is a growing literature on climate change risk. But far too little attention is paid to understanding the full range of risks facing low-income women, men and children and their relative importance with regard to premature death, illness, injury and impoverishment. Within this uneven literature, little attention has been given to the health risks and resulting health burdens faced by those who live in informal settlements and the implications for their employment, incomes and school attendance.<sup>(10)</sup> It is in the cumulative impact of all these events that we see the devastating effects.

A study in Karonga, a town of around 60,000 inhabitants in Malawi, did seek to cover all risks.<sup>(11)</sup> Drawing on responses from households and selected informant interviews and data collected from hospital records, the paper shows the wide range of causes of premature death, injury and asset loss. It highlights the fact that the impacts of what could be termed everyday risks include more premature deaths than those from disasters. This paper also shows how little capacity local governments have to undertake risk reduction.

A case study of Ibadan also shows this – how a large, important, rapidly growing city has local governments that are seriously constrained by the inadequacy of funding from state and federal government. These constraints have gotten worse. Here, the greatest driver of risk, whether for disaster, small disaster or the outcomes of everyday risk, is the inability of local government to meet its responsibilities. This case study also highlights how important land-use management is for risk reduction. Most urban development in and around Ibadan has taken place without compliance with building guidelines on plot coverage, setback stipulations, building standards and the change of use (from wholly residential to the incorporation of commercial and home-based enterprises). In regard to flooding, 26,533 buildings are within the minimum riparian setbacks set by government on either side of watercourses.<sup>(12)</sup>

Some city case studies focus on a particular risk. For instance, a paper focuses on flooding and on the absorptive capacity of low-income households living in flood-prone neighbourhoods in Niamey, Niger in the context of a flood in 2015.<sup>(13)</sup> There were stark differences in the number of days respondents reported having to live outside their dwelling because flooding made it uninhabitable. A case study of flooding in a settlement in Bangkok’s rapidly developing urban fringe provides a lot of detail and insight into what might be called a wide spectrum of causes. For many households, flooding has become more of an everyday hazard than a disaster, as it can occur over an extended period (from three to six months) or many times a year. Government agencies are not addressing the drivers of this localized flooding – the rapid increase in the extent of the impervious surfaces, violation of laws on land use, absent or malfunctioning drainage infrastructure in both private developments and public roads, and a lack of coordination between public agencies around public infrastructure development.<sup>(14)</sup>

A case study in a peri-urban district of Bandung, Indonesia describes how the absence of an

10. See the papers listed in reference 8.

11. See the paper by Mtafu Manda and Elijah Wanda listed on the back page.

12. Adelekan, Ibadun (2016), *Ibadan City Diagnostic Report*, Working Paper 4, Urban Africa Risk Knowledge, available at <https://www.urbanark.org/ibadan-city-diagnostic-report>.

13. See the paper by Soumana Boubacar, Mark Pelling, Alejandro Barcena and Raphaëlla Montandon listed on the back page.

14. See the paper by Sari Limthongsakul, Vilas Nitivattananon and Sigit Dwiananto Arifwiododo listed on the back page.

15. See the paper by Anindrya Nastiti, Barti Setiani Muntalif, Dwina Roosmini, Arief Sudradjat, S V Meijerink and A J M Smits listed on the back page.

16. See Haregu, Tilahun Nigatu, Abdhahah K Ziraba, Isabella Aboderin, Dickson Amugsi, Kanyiva Muindi and Blessing Mberu (2017), "An assessment of evolution of solid waste management policies and their implementation in Nairobi and Mombasa: analysis of policies and practices", *Environment and Urbanization* Vol 29, No 2. This will be available in print in October 2017 and is available now on OnlineFirst, at <http://journals.sagepub.com/toc/EAU/0/0>.

17. See the special issues of *Environment and Urbanization* on "Towards resilience and transformation for cities" (Vol 25, No 2 and Vol 26, No 1); also see Chelleri, Lorenzo, James J Waters, Marta Olazabal and Guido Minucci (2015), "Resilience trade-offs: addressing multiple scales and temporal aspects of urban resilience", *Environment and Urbanization* Vol 27, No 1, pages 181–198.

18. See the paper by Gina Ziervogel, Mark Pelling, Anton Cartwright, Eric Chu, Tanvi Deshpande, Leila Harris, Keith Hyams, Jean Kaunda, Benjamin Klaus, Kavya Michael, Lorena Pasquini, Robyn Pharoah, Lucy Rodina, Di Scott and Patricia Zweig and the paper by Maria Kaika listed on the back page.

19. See reference 6, Allen et al. (2017).

20. See the papers by Ziervogel et al. and Shreya Mitra, Joe Mulligan, Janpeter Schilling, Jamilla Harper, Janani Vivekananda and Lisa Krause listed on the back page; also reference 6, Allen et al. (2017).

21. See for instance Douglas, Ian, Kurshid Alam, MaryAnne Maghenda, Yasmin McDonnell, Louise McLean and Jack Campbell (2008), "Climate change, flooding and the urban poor in Africa", *Environment and Urbanization* Vol 20, No 1, pages 187–205; Jabeen, Huraera, Adriana Allen and Cassidy Johnson (2010), "Built-in resilience: learning from grassroots coping strategies to climate variability", *Environment and Urbanization* Vol 22, No 2, pages 415–431; Odemero, Francis (2015), "Building climate change resilience through bottom-up adaptation to flood risk in Warri, Nigeria", *Environment and Urbanization* Vol 27, No 1, pages 139–160; and Bosco Isunju, John, Christopher Garimoi Orach and Jaco Kemp (2016), "Community-level adaptation to minimize vulnerability and exploit opportunities in Kampala's wetlands", *Environment and Urbanization* Vol 28, No 2, pages 475–494.

22. See reference 14.

adequate centralized water supply shifts responsibility to households for obtaining safe and reliable water. It also looks at measures households took to avoid risk.<sup>(15)</sup>

A case study of the inadequacies of solid waste management in Nairobi and Mombasa shows how many risks this ends up generating – for residents without regular collection, for those living close to open dumps, and for many of those whose livelihoods are based on solid waste recovery and recycling. Until the mid-1970s, over 90 per cent of the waste was being collected in Nairobi; in 2010, it was down to 30 per cent.<sup>(16)</sup>

## V. WHAT RISKS GET RECORDED AND REPORTED

We understand risk from records of past risk events – so our understanding is influenced by the risk events that have been noticed and recorded. How would government and international agency responses to disaster impacts and losses change if deaths from everyday risks were included – for instance, individuals who die prematurely from diseases? In cities, some physical hazards may be included (traffic accidents) while others are not (burns and scalds, unless these are from accidental fires that are recorded). Do hazards that affect middle- and upper-income groups get more attention than those that do not? There has recently been a much increased focus on ambient air pollution in cities (which impacts higher-income groups as well and is relatively easy to measure), but much less focus on diarrhoea and other waterborne and foodborne diseases, both because these are less important for higher-income groups and because their health impacts are difficult to record.

What do people see as risks? In the household interviews and group discussions in Karonga, many risks were identified but almost all were hazards that might result in physical injury; diseases were not seen as risk outcomes to be highlighted. (But perhaps if there had been accurate data on deaths from infectious and parasitic diseases, it would have changed these discussions.)

## VI. RESILIENCE

A focus on resilience should make clear the many ways in which risks can be reduced for urban poor groups.<sup>(17)</sup> But the term resilience is used by many disciplines within many different contexts. It is being applied to people ("resilient individuals, households or communities"), to the homes and neighbourhoods where they live, to livelihoods, to infrastructure and to larger systems (urban development, cities, city regions or national economies). Resilience planning for cities has a tendency to push responsibility for risk management from central agencies to individuals and households at risk. This results in a shift in burden from government to citizen, and encourages a mentality of coping with risk, rather than resolving it, which would necessitate addressing the social structures, legal apparatus and administrative practices that help produce and distribute vulnerability and risk.<sup>(18)</sup> A focus on resilience can also ignore everyday risks when the focus is on livelihoods or on resilience to physical hazards, or simply on the resilience of city infrastructure, with little or no concern about the hazards faced by those most at risk.

## VII. RESPONSES TO RISKS

Who has to act to reduce each risk? What needs to be done and by whom? Most risk in urban areas cannot be reduced if local governments fail to meet their responsibilities with regard to risk-reducing infrastructure, services and land-use management. It could be argued that the failure of urban governments to meet such responsibilities (and the causes of this, including the lack of support from higher levels of government and international agencies) is the single most important factor in determining the level of most risks. This is the case even when government policies, programmes and plans for disaster risk management at national, regional and local levels are moving in the right direction (including an increasing budget and a proactive legal and procedural framework).<sup>(19)</sup>

There is also the importance of local processes and knowledge for identifying and acting on risk.<sup>(20)</sup> There are many good examples of household and community-level coping and adaptation,<sup>(21)</sup> but these cannot build the city-wide systems needed for risk reduction. In addition, autonomous adaptation at any scale tends to involve passing risks onto others.<sup>(22)</sup> This highlights the importance of organized urban poor groups that are able to influence local government.

In what are now classified as high-income countries, and in some upper-middle income countries, governments have dramatically reduced most of the life- and health-threatening risks in the homes and neighbourhoods of almost all urban dwellers and workers through provision of risk-reducing infrastructure, services and land-use management. This has also dramatically reduced disaster risk. But in most cases, this required well-functioning city and municipal governments and strong citizen and civil society pressure, including organizations and movements of the urban poor that demanded attention to their risks. Cities in these countries also had the information base on risks that they needed, through censuses, vital registration systems, hospital records and

other monitoring systems. Better reporting on road accidents, for instance, has led in many places to concerted action and a reduction in death and injury rates.

## VIII. CONCLUSIONS

So among all the hazards, all the vulnerable groups, all the risks and all the factors that cause or influence these, what needs highlighting? The first is the huge scale of premature death, illness, injury and impoverishment that remains hidden because these are not recorded and not even seen as outcomes of risk by many actors. The second is how much effective risk reduction depends on the quality and capacity of local governments, including their capacity to listen to and work with those most at risk.

We know little about the risk faced by the inhabitants of each informal settlement of premature death or serious impairment by illness from infectious and parasitic diseases. It is likely that infant, child and maternal deaths represent a very high proportion of all premature deaths, concentrated in settlements where provision for risk-reducing infrastructure and services is worst.

Getting a more complete picture for any urban centre of the full spectrum of risks, and who is most at risk and why (and where they live), is a key underpinning for more effective action. This should also highlight where risk reduction is needed and is possible. For those residents served by risk-reducing infrastructure, services and land-use management, many of the most common causes of premature death disappear – including infant and child deaths from diarrhoea and acute respiratory infections and deaths from extreme weather events. A good health care system should also remove tuberculosis and Aids from leading causes of death. Good provision for pedestrians, cyclists and public transport and good traffic management can cut deaths and injuries from road traffic accidents.

Many of the responsibilities for risk-reducing infrastructure, services and land-use management fall to local (urban) governments. Why is it that higher levels of government and international agencies give so little attention to this? Why is there so little funding for effective city-wide provision for water, sanitation, drainage and solid waste removal? Why are the data needed on risk and its causes not available for each urban centre and its districts, wards and neighbourhoods? Why do we know so much about the global burden of disease but so little about the burden of disease in each locality (which is where the data are actually needed to guide action)?

All urban centres need an information base on the main causes of premature death (perhaps especially for infants, children, youth and mothers), serious illness, injury and impoverishment that can be made available for each small area (or if possible each street) and that can be mapped to show where each risk is concentrated. Census data can provide some of this – even if this is only done every 10 years – and this should be seen as a public good, with census authorities providing local governments with data on conditions in their jurisdiction, down to each street. This should also be the case for vital registration systems that provide data on deaths, causes, age and location. These should be available not only to local governments but also to citizens and civil society groups, but of course with census data also guaranteeing the anonymity of respondents.

Where these formal systems do not exist or where it is not possible to obtain such information from them, then new locally rooted measures are needed. The value of compiling records of “small” disasters was noted earlier – but also too its limitations (for instance not being able to include most premature deaths and illnesses). Much relevant data can be drawn from engaging with local populations – whether through household surveys, focus groups, selected informants or, for some risks, official records from police and hospitals. Or information can be gathered simply through democratic processes.<sup>(23)</sup> Then there are the detailed surveys and maps of informal settlements undertaken in hundreds of cities by slum/shack dweller federations. These provide much of the data needed to inform risk reduction and engage local populations in setting priorities.<sup>(24)</sup>

We need international agencies to recognize the need to support local action on the part of local governments, local universities and local civil society organizations, as they work on how to assess the most serious risks (everyday, small and large, frequent and infrequent) facing the inhabitants in each settlement. There is a lot these international agencies can do – help these local groups to access all available relevant data from different government agencies at each level; make national statistical offices and census bureaus learn to serve and support local governments and other local groups with the data they require in a useful form; learn to support co-production between local governments and groups at risk;<sup>(25)</sup> and develop a capacity to help fund and support a range of initiatives in each locality, including civil society initiatives.<sup>(26)</sup>

23. Satterthwaite, David (2015), “Local democracy as a substitute for data (and rather a good substitute too)”, Urban Matters blog, 16 January, available at <https://www.iied.org/local-democracy-substitute-for-data-rather-good-substitute-too>.

24. For more details of these, see <http://www.sdinet.org>.

25. The October 2018 issue of *Environment and Urbanization* will be on “Co-production: taking stock of achievements and possibilities”.

26. The April 2018 issue of *Environment and Urbanization* will be on “Local finance for local development”.

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## Contents list of *Environment&Urbanization* Vol 29, No 1, April 2017

Editorial: The full spectrum of risk in urban centres: changing perceptions, changing priorities – *David Satterthwaite and Sheridan Bartlett*

Understanding the nature and scale of risks in Karonga, Malawi – *Mtafu Manda and Elijah Wanda*

The erosive effects of small disasters on household absorptive capacity in Niamey: a nested HEA approach – *Soumana Boubacar, Mark Pelling, Alejandro Barcena and Raphaëlla Montandon*

Localized flooding and autonomous adaptation in peri-urban Bangkok – *Sani Limthongsakul, Vilas Nitivattananon and Sigit Dwiananto Arifwidodo*

Coping with poor water supply in peri-urban Bandung, Indonesia: towards a framework for understanding risks and aversion behaviours – *Anindrya Nastiti, Barti Setiani Muntalif,*

*Dwina Roosmini, Arief Sudradjat, Sander V Meijerink and A J M Smits*

'Don't call me resilient again!': the New Urban Agenda as immunology ... or ... what happens when communities refuse to be vaccinated with 'smart cities' and indicators – *Maria Kaika*

Developing risk or resilience? Effects of slum upgrading on the social contract and social cohesion in Kibera, Nairobi – *Shreya Mitra, Joe Mulligan, Janpeter Schilling, Jamilla Harper, Janani Vivekananda and Lisa Krause*

Inserting rights and justice into urban resilience: a focus on everyday risk – *Gina Ziervogel, Mark Pelling, Anton Cartwright, Eric Chu, Tanvi Deshpande, Leila Harris, Keith Hyams, Jean Kaunda, Benjamin Klaus, Kavya Michael, Lorena Pasquini, Robyn Pharoah, Lucy Rodina, Di Scott and Patricia Zweig*

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