

An academic expert view: urban resilience – can we avoid disasters?

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New Orleans after Hurricane Katrina (2005): Image credit: [Pixabay](#)

Ilan,

Thank you for making the time to discuss challenges and opportunities in urban resilience, and actions that cities and towns can and should take to avoid disasters. I'm keen to hear your views on how societies in cities and towns all around the world, in developed and developing geographies, should function to avoid disasters occurring when an event with the potential to create a disaster occurs – for example: wildfires, flooding (coastal, inland, and/or a major storm), earthquakes, heat-humidity, or a microbial pathogen (such as but not only a coronavirus).

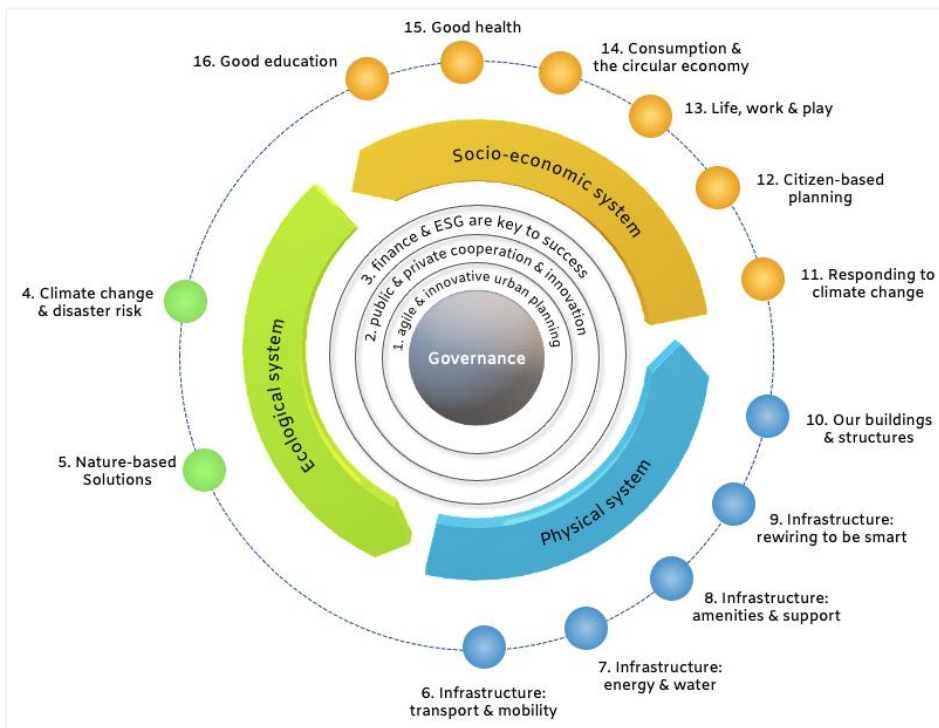
Could we begin this interview by summarising your background and experience, and the work you do and how it pertains to urban environments? I know that your remit is broader than urban places, and I appreciate you agreeing to focus on “the urban world” for this interview.

Ilan: My work is available at <https://www.ilankelman.org>. My role is to connect disasters and health through world-leading, creative, and fun science and science-based education that serve society. Work related to disasters and health adopts the maxim that ‘prevention is better than cure’, yet so often we do not implement it. Why? And how could we do better?

To answer these questions, I use numerous connectors between disasters and health. Examples are climate change, diplomacy, migration, inclusivity, and wider actions toward sustainable and fulfilling living and livelihoods. My main geographic interests are any island and the polar regions (the Arctic and the Antarctic). Cities are important for all these locations, as they are around the world.

I have worked in island countries which have only a single city, namely their capital, and have also considered major emergencies in Arctic cities in the midst of winter. Many cities comprise islands – for example, Stockholm, New York, and Lagos. We find numerous parallels between megacities and small islands! The urban world and other parts of our planet have plenty to learn from each other.

Gareth: Thank you for this context, Ilan. You make a very good point, about learnings that can be shared across cities of all sizes and geographies. I may link some of our following discussion points to an urban system I use, which incorporates three parts – ecological, physical and socio-economic, linked and joined together by governance and knowledge sharing.



Urban system image by author

Gareth: What projects and research are you working on at the moment that relate to urban resilience?

Ilan: I have several ongoing programmes incorporating urban resilience that I can summarise (with links):

- [Disaster diplomacy](#) investigating how and why disaster-related activities do and do not influence conflict and cooperation, many of which relate to political interactions among capital cities as well as disasters in urban areas.
- [Island vulnerability and resilience](#) exploring the challenges which isolated geographies face when dealing with risk and disasters by examining the processes which create, maintain, and could be used to reduce their vulnerability—including island and archipelago cities.
- [Lancet Countdown](#) examining indicators for tracking climate change’s impact on health around the world.
- [Land Body Ecologies](#) working with people around the world in their local contexts to explore the deep interconnections of mental and ecosystem health, with an element of urban ecosystems.
- [Warnings for disasters](#) including the understanding of differences that urban environments might or might not make for warnings and responses.

One key project for urban resilience, as you know Gareth since you co-lead it with me, is NASA-funded work for researching and communicating the benefits of avoiding disasters. Again, we know that prevention is better than cure, yet we often do not implement it. Our ‘Disasters Avoided’ project compiles examples, including from urban areas, of what was gained through avoiding disasters, in terms of people, infrastructure, and money. Then, we tailor and refine communications approaches to demonstrate and convince about the importance of avoiding disasters.

Gareth: That’s a broad range of projects, Ilan. I appreciate you mentioning our co-led Disasters Avoided project, funded by NASA. Can we briefly discuss *the definition of a disaster* before we get into some details of how to avoid them. I’m wondering if framing a definition will help our discussion about how disasters can be avoided.

The United Nations Office for Disaster Risk Reduction ([UNDRR defines a disaster as](#)): “A serious disruption of the functioning of a community or a society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts.”

I have seen that other global groups use this definition. For example, the IPCC, in Annex II to the IPCC AR6 (2022) suite of reports, quote it.

This definition describes a disaster as “a serious disruption” that impacts people, in a community or society at large, as well as incurring environmental losses. It uses the terms “hazardous events” and “conditions of exposure, vulnerability and capacity”. This UNDRR definition of a disaster seems to tie to your work that I have read. Is it a definition that you align with and use, or do you use a different definition? Also, are you aware of a definition of “disaster avoidance”, and if a suitable definition does not exist in standard disaster risk circles, should one be put forward?

***Ilan:** In one of my books, [Disaster by Choice](#), I aim to develop and explain a definition of 'disaster' that would be as straightforward as possible. Trawling through hundreds of pages of academic writing on the definition, professional manuals, legislation, policies, and several dictionaries (mainly in English but considering a few other languages), the fewest number of words which I can use to define 'disaster' is seven:*

A situation requiring outside support for coping.

Something happens, we cannot deal with it, and we need help. This works at the individual level and at the international level. It matches the United Nations, scientists, emergency services, and dictionaries. It has vagueness, such as the words "situation", "support", and "coping". Vagueness can rarely be avoided with language.

It also works across synonyms for 'disaster' in English, such as emergency, crisis, catastrophe, calamity, and cataclysm. It avoids the connotation of 'accident' and 'chance', since we can avoid disasters if people with power and resources choose to do so. These seven words to define 'disaster' are reasonably understandable, somewhat intuitive, and work across many (although certainly not all) versions of English in addition to many other languages and cultures.

In this sense, it deviates from the IPCC's approach which is a mess, full of complicated jargon, not fully accepting the long history of disaster research, and failing to indicate practical and useful meanings of terms. For instance, I struggle to separate in reality 'vulnerability' and 'exposure', so I prefer to use one odd term rather than two, as in 'vulnerability' which, by definition, includes 'exposure'. And why mention 'hazardous events' rather than 'hazards' since some are not 'events', such as the processes of creeping environmental changes including drought and climate change? Even better, since many languages do not have a word for 'hazard', the IPCC could be clearer (although using more words) by describing 'potential threats' or 'potential dangers'. The IPCC seems to wilfully complicate and confuse.

Gareth: I appreciate this clear explanation of how to define a disaster, Ilan. You raise some really insightful points here. I am also an adherent to brevity for definitions (and indeed for important language such as policies and regulations).

I'd like to link this discussion point to resilience concepts. In a 2015 paper you co-authored with Juergen Weichselgartner, [Challenges and opportunities for building urban resilience](#), you describe how it is not straightforward to apply "tried and tested" resilience concepts, such as those used for and by businesses and organisations, to urban locations. This point resonates with me, as I work in resilience for businesses as well as in the field of urban resilience.

Your co-authored paper states that the critical needs and root causes of vulnerability in urban environments will remain unsolved as long as the focus on resilience ignores the preconditions and root causes of social and political vulnerability – which links back to our discussion just now about the definition of a disaster.

The paper – written in 2013, published in 2015 – points out that power, governance, and social capital are (were) not playing a more prominent role in conceptual and practical efforts aiming at increasing resilience, despite it being decades since resilience became engrained in social sciences. Ten years on, in 2023, have things changed in all or some parts of the world for the better, or worse, and are there any particular examples you know of that demonstrate this change?

Moving forwards to today, what key areas should be focused on in your view by cities and towns up to 2030, 2040 and 2050, and are some of the problems that some places face intractable without wholesale change, which might unfortunately only happen after a major disaster occurs to them (which we never want to see)?

Ilan: Unfortunately, little improvement has occurred regarding resilience, understanding it, and implementing it. It has become much worse, notably using ‘resilience’ to mean wildly diverging concepts and to apply the term to anything that might appear to be positive from or for a particular perspective.

In the meantime, ‘social capital’ has regressed to the point of being highly counterproductive for reality – namely, for people experiencing disaster and trying to avoid disasters.

‘Resilience’ and ‘social capital’ have become buzzwords used by anyone to support actions they wish to pursue, whether or not those actions support people. Furthermore, both terms have been used to remove power and choices from people, such as claiming that they are resilient or they have high social capital and therefore do not require any assistance or resources. Instead, the claim is made that people should be left on their own, because they are apparently resilient or seemingly have high social capital.

Within this morass, what should urban areas focus on in the coming decades? I suggest that we drop the jargon, highlight reality, and do what is needed. We do not need to invoke buzzwords to explain what we ought to do, how, and why. We know that disasters, in urban areas and elsewhere, arise from those with power and resources creating and perpetuating problems. We know how to reduce oppression and support equity and equality. We have succeeded in so many ways, yet we still have so much to do. The focus in coming decades, and preferably coming months, is to do it – and to succeed for everyone.

Gareth: Thank you for this clarity. Jargon can be harmful to progress, I fully agree. In this same paper I mentioned just now, you write that a drawback to many resilience programmes is that too often they rarely acknowledge resilience before (or until) a shock, stress, or disaster has occurred, which makes both the ‘improvement’ of resilience - whether urban or national - and ‘payoff’ for resilience investments challenging for the ‘programmers’ to measure and validate. This links squarely with your comments about resilience and social capital.

In today's economically challenged times, do too many cities and towns (and indeed rural areas too) lack funds and other resources to implement the measures that they know are required? Noting that local context is key, are there particular aspects of disaster threats that cities and towns of all types must focus more on to avoid a disaster occurring in their locality, with new thinking of solutions (be it meteorological, geological, microbial pathogens or human-induced)?

Ilan: No disaster should be a 'shock', because we can predict and redress vulnerabilities (including exposures) if we choose to act, irrespective of hazards. All eras seem to be stated as being economically and socially challenged, which is merely an excuse for not investing in people and society. Considering the amount of money put into fossil fuel subsidies, weapons, and tax avoidance, the world does not lack cash. We do lack morals on investing existing resources widely and wisely to help society.

The disaster threat is not typically the 'hazard', such as weather, tectonics, or biological phenomena. The disaster threat is governance decisions that create and support chronic societal ills, rather than tackling them.

Gareth: You know that I am a strong advocate of good governance, and genuine accountability. Without this in place, I do not see how even the best research, analysis and plans can make a difference.

Following up on your point that the disaster threat is not the hazard, in your 2020 paper, [Constructing Venice's flood disaster risk personality](#), you write that the real cause of the disaster process is not the hazards. Even when hazards manifest rapidly, such as earthquakes and sequences leading to power failures, as you say, the disasters were not events, but were long-term processes, since the vulnerabilities took a long time to build up. Thus, disasters are caused by vulnerabilities, meaning that people and infrastructure are not ready or able to withstand hazard-related impacts, usually because they do not have the resources or choices to avoid difficulties from known and observable disaster risks.

You describe these situations as political constructions which happen slowly to allow vulnerabilities to accrue, and that "natural disaster" is a misnomer because disasters are caused by society. Some parts of the world demonstrate the political will to avoid disasters, and others do not. Is there anything that can be done to level things up in places where political governance and accountability is not up to scratch? Should, for example, the custodians of national / state building codes (which vary around the world, with local context always being key) be held accountable if an event occurs and they are shown to be inadequate? This point makes me think about the private sector, which I work in and in which a "consequences framework" is a fairly common part of business governance.

Ilan: If political governance and accountability are not up to scratch, then vulnerabilities and disasters are being created. This is part of the vulnerability process producing the disaster process. The action is straightforward: achieve political governance for society including accountability, responsibility, and caring. End oppression, discrimination, marginalisation, inequity, and inequality. Easy tasks!

Especially since achieving these tasks is required long before a hazard manifests, because the hazard manifesting reveals the chronic vulnerabilities (including chronic exposures) through a disaster. And disasters tend to grab headlines and attention, whereas everyday vulnerabilities do not. If a hazard shows that building codes or education systems are inadequate, then it is too late. The long-term process of avoiding disaster (through the jargon of vulnerability reduction and disaster risk reduction) entails creating societal values in which effective regulations and voluntary measures are accepted, achieve what is needed, are monitored, and are enforced. These actions are part of political governance, accountability, responsibility, and caring.

Gareth: I'd like to move onto the environment and ecology linked to demographics and the social fabric of urban environments (which are parts of the integrated urban system I use). In another of your papers published in 2020, [Disaster vulnerability by demographics?](#), you describe how choices are available to better deal with the environment, but often we live or are forced to live in places and in ways which subject us to harm (Hewitt, 1983, 1997; Lewis, 1999; Wisner et al., 2004), where there are obvious weaknesses / vulnerabilities such as a lack of flood-resistant or earthquake-resistant infrastructure. In places where these weaknesses / vulnerabilities exist and where finances are tight, what smart and low-cost solutions can potentially work, if they are part of a broader system of urban resilience?

Ilan: Finances are never tight. Finances are made tight by misallocating available money. They are said to be tight to generate an excuse for not helping people. Our work, including through the 'Disasters Avoided' project, shows how stopping disasters saves so much money. Disaster risk reduction is an investment, not a cost; in fact, it is a low-cost solution due to all the money it saves (as well as lives, but lives tend to be less important than money within many political systems). Urban resilience means distributing resources so that the paybacks are immense by averting calamity – and then finances will never be tight due to the never-ending reaping of not-just-financial rewards.

Gareth: I do hope that we can make a difference with our Disasters Avoided project. In this same paper of yours, continuing on the socio-economic front, you describe how a city is not always the best prepared fortress to protect people against a disaster. For example, a disadvantage of cities can be that if multiple hospitals or fire stations are taken out of action by a disaster event, the emergency services can be quickly overloaded and non-urban areas in the vicinity probably can't take up the slack. In addition, various examples exist of rural areas that have better disaster prevention and response than large urban centres; for instance, Johnston (2015) found that more isolated communities in Fiji had received less disaster aid in previous cyclones and were more prepared than their larger counterparts who had previously received, and therefore expected to receive if required, external aid. In a way, do cities, and towns, need a bit of a "wake up call" about the importance of disaster avoidance, and that proactive actions hold good societal and ecological value for them, in all sorts of ways?

Ilan: Disasters are not events; they are processes. This is the wake-up call, just as disasters are not natural. 'Disaster event' (rather than 'disaster process') is as much a misnomer as 'natural disaster' (rather than just 'disaster'). Urbanity does not matter for avoiding disasters. Any location with any label can do so, provided they make that choice.

Gareth: I don't agree with the use 'natural' to describe disasters either, I have to say. What is natural about a disaster? I am wondering if authorities in cities and towns can take a more concerted approach to describing how to avoid disasters in the minds of their citizens and local businesses. For example, perhaps they can incorporate it into better and more regular community debates and reviews about the future direction of the area, and link it into the importance of being prepared for an event – especially in the wake of a series of major global events including the COVID-19 pandemic and continued weather-related events? I also wonder if these authorities feel they have a remit to do this, or whether it's overseen by a national level department, which may not be as effective as a local authority at the ground level.

Ilan: For effectiveness, the general rule (with exceptions, as always) is that both disaster risk reduction and disaster response should be enacted as locally as possible, to be scaled up only when needed. Certainly, a good proportion of emergency services in larger cities is run municipally, with many emergency services at the forefront of prevention, such as firefighters promoting the use of smoke detectors and police aiming to stop drunk driving. Where local authorities feel uncertain how to proceed, they could draw on international organisations and networks for support and advice such as ICLEI (Local Governments for Sustainability), UCLG (United Cities and Local Governments), the UN's MCR2030 (Making Cities Resilient 2030) initiative, and many more.

Gareth: Your point about local services reminds me of examples in countries as diverse as Australia and Bangladesh, which certainly take this approach. In this same paper, I was interested to read how you describe the importance of the location that an urban settlement occupies, and how this site location is key to the possibility of hazards, irrespective of population numbers and densities. That is, when a large city develops in a low hazard location while a village is placed in a canyon that is subject to flash floods, rockfalls, avalanches, and more, then the overall disaster risk might be more for the village, despite the large difference in population-based vulnerability and depending how hazard and vulnerability are quantified for calculating disaster risk. Conversely, the city in a high hazard location faces significant challenges. Also, I agree with your point that cities and large urban areas tend to be paved over much more than less urban locales, which increases flood risk. I am a keen advocate of better ecology in urban environments for many reasons, including flood management through more permeable surfaces. It's not easy though – many urban centres and locales take place in vulnerable areas in full view of people who know the risks to doing so, because of lack of space coupled with demand, land restrictions and low levels of urban governance.

What more can be done around the world to improve this situation, and help to avoid disasters in urban environments related to flooding, heat, cold, geology and other problems?

Ilan: These comments raise aspects of baseline difficulties: populations are large, individuals consume a lot, and those with power and resources abuse their positions. To address these challenges that you raise, we need to stabilise the human population in an ethical manner, reduce consumption per person to levels which are neither mere survival nor exploitive, and use power and resources to help each other which then helps ourselves. Hardly easy or straightforward! They are the key.

Gareth: I appreciate this context.

What role does technology have to play in avoiding disasters in urban environments? I appreciate this is a broad question, so I'll focus in particular on two points: Earth observations for real-time or near real-time monitoring of environments – proactively to avoid disasters as well as to provide alerts of oncoming threats – and the use of social tools such as apps on smartphones.

Ilan: Every time we look out a window or use an app to determine whether or not to take an umbrella, we are using real-time or near real-time Earth observations for disaster prevention. Technology and Earth observations are always part of what we do, including avoiding disasters.

Gareth: What is your view on climate change and its relation to disasters today, and in future? Is it exacerbating certain types of disasters? I have read a very interesting book on this subject by Roger Pielke Jr, [The Rightful Place of Science: Disasters & Climate Change](#).

Ilan: My view is to accept the science. By definition, climate change is weather changing over the long-term. By definition, weather does not cause disasters. Hence, by definition, climate change does not cause disasters, even though climate change affects the weather and much of the climate change witnessed today is from human activity.

Possible exceptions exist. Human-caused climate change is now pushing heat-humidity into regimes that humanity has never before experienced, which presents an argument for terming these heat waves as 'climate change disasters'. In the future, rising sea levels and acidifying oceans are expected to bring environmental conditions also beyond human experience. Since we know now that we ought to prepare for difficulties over the coming decades and centuries, the suggestion also exists that possible disasters, as with almost all other disasters, are our fault irrespective of what the environment does. In summary, the rule is that climate change does not cause disasters, but devastating exceptions are up for discussion.

Gareth: Is there more that the private finance sector and the insurance market can and should do to contribute towards preventative actions to avoid disasters in urban areas?

Ilan: Some in the private sector say that their primary aim is to help people, others say that their primary aim is long-term viability of their company, others say that they seek mainly short-term profit, and others present further priorities. What more could be done? Less focus on short-term profit and more support for helping people, even when making a profit. If helping people precludes long-term company viability, then we must question what the company actually achieves other than self-perpetuation – and perhaps it would indeed be appropriate for the company to fold. The same applies to insurance.

Some insurance companies in the UK, for instance, were well aware in the 1990s that their policies supported flood risk creation and they sought to change the structures and systems for them to support instead flood risk reduction. They encountered numerous political and financial barriers. Where a structure or system works for no one except short-term profit or for those who can and choose to foist vulnerabilities (including exposures) on others, then this structure and system need to change—and the private sector ought to be leading the change for themselves. A key area of improvement today is eliminating government subsidies, in all their forms, for the fossil fuel industry.

Gareth: There's a lot to unpack and think about in that last point. One of the aspects I am working on at the moment is the actual definition of value, and how it drives and links into the world of business.

For my last question, what's the number one thing you'd like to see focused on to avoid disasters in urban environments – which are forecast to grow, overall, in the coming years up to 2050? There is a lot of discussion about decarbonising the economy, clean energy and sustainability today. Is there enough discussion about how to avoid disasters, on an ongoing basis (not only after a disaster event happens)?

Ilan: The number one action is tackling our levels of consumption, by both stabilising population ethically, and reducing consumption per person to an appropriate level between bare survival and over-excess. Seeking and achieving balance ensures that everyone has the possibility to support disaster avoidance among many other activities we require for safe, enjoyable and healthy living.

Gareth: Thank you very much for your thoughts and perspectives on the challenges of how to avoid disasters in urban environments, Ilan. Some very interesting insights!

Ilan: Thank you for the opportunity.