VEOLIA INSTITUTE

THE VEOLIA INSTITUTE REVIEW

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RESILIENT CITIES

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THINKING TOGETHER TO ILLUMINATE THE FUTURE

Review coordinated by Mathilde Martin-Moreau and David Ménascé

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The Veolia Institute Review — FACTS Reports is a high-level international publication compiling diverse perspectives on topics at the crossroads between society and the environment.

The review was launched in 2007 with the aim of sharing best practices from the field, to help find solutions to problems in the economy, development, healthcare, environment, agriculture, education in both developing and developed countries.

The interdisciplinary review is a vehicle for sharing the experiences and expertise of different stakeholders (researchers, academic experts, policymakers, companies, NGOs, international organizations, etc.), with the aim of thinking together to illuminate the future, by combining feedback on best practices from the field and expert analysis. The articles are subject to a reading committee prior to publication.

Committed to tackling the major challenges facing our societies, the review focuses on a wide range of issues related to the future of urban living as well as sustainable production and consumption (cities, urban services, environment, energy, health, agriculture, etc.).

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FOREWORD

Mamphela RAMPHELE - Veolia Institute Foresight Committee Member

"Resilient cities in our interconnected interdependent world challenge us to work together to promote social cohesion."

Resilient cities are places where individuals, communities, institutions, businesses, and systems have the capacity to survive, adapt and grow no matter what stresses and acute shocks they experience. Social cohesion is essential to marshal the energies of all the players to enhance the resilience of cities.

In a recently published ground breaking book, Africa's Urban Revolution, the authors make the point that African cities need to escape legacies of slavery, colonialism and apartheid that have continued to undermine the evolution of resilient inclusive cities as anchors of prosperity.

Africa is urbanizing at a breakneck pace. Obstacles that had impeded orderly urbanization have yet to be replaced by strategic policy interventions. The result is the sad spectacle of squatter camps that form the outer borders of most of our cities.

Africa's urban revolution needs to be driven by five factors: the energy of youth and women; religious revival; explosion of modern arts; communications revolution; the African diaspora linked to sub-national identities.

The power and effectiveness of these factors would be enhanced by the extent to which our city communities are held together by the glue of social cohesion and inclusion.

Our own experiences of post-apartheid as South Africans over the last 24 years show just how the legacies inequities of the past continue to undermine the evolution of social cohesion and a shared national identity. Colour coded ethnic enclaves continue to characterise our cities. The poorer the darker the skin, the more likely one is to reside furthest from the centres of our cities where most of the resources are to be found.

Africa's population growth predictions place the continent's population at 2.4 billion by 2050 making it a significant region in the global community whose vulnerabilities will have a considerable impact on the overall resilience. By 2100, more than half of the world's growth is expected to come from Africa, reaching 4.1 billion people by 2100 to claim over 1/3 of the world's population.

The global community's fortunes are tied to those of the African continent. Africa as the cradle of humanity, demands that all its children work together to make our world much more resilient and sustainable.

Africa's success inextricably lies in its ability to invest in, and promote talent development in its youthful population. It is linked with promoting equality of all citizens to free the human potential of every person to contribute to resilience.

Inequalities within the global community continue to undermine our resilience. In an interdependent interconnected world the Global North cannot sustain resilient cities without the Global South, nor can the Global West prosper in a sustainable way without the Global East.

Resilient cities in our interconnected interdependent world challenge us to work together to promote social cohesion by lowering the barriers to equal access to resources and opportunities to enable all citizens to take ownership of our global resources as custodians.

Africa is again in a position to challenge itself to be a trendsetter in human interdependence that made human evolution possible. We need again to look into each other's eyes and see not only ourselves in "the other" but also to see future generations on whose behalf we are called to be worthy stewards of our global resources.

INTRODUCTION

"The types of crises faced over the years have changed, they're more varied and more destabilizing."

Nicolas RENARD - Director of Foresight, Veolia Institute

Greater population density coupled with our ever more inter-related lives – including trade issues – make us increasingly vulnerable. Urbanized territories concentrate these risks: some appear as sudden and unpredictable events such as natural disasters or technology induced accidents; others as chronic stresses that insidiously undermine economic and social ties, such as climate change, impoverishment and population aging. Some of these risks have been with us since time immemorial, others arrived on the coattails of the digital revolution, which overcomes some weaknesses but creates others.

The types of crises we face have changed over the years, becoming more varied and more destabilizing in a process driven by a number of factors. First, crises themselves mutate and render traditional responses obsolete. Then, the very success of our protective systems renders us less familiar with unexpected events and thus less able to deal with them. Finally, the violence and amplitude – and therefore impacts – of certain natural disasters is growing. All the more so as many people and infrastructure are located in high-risk areas such as coasts, river banks, seismic fault lines and so on.

Cities are vulnerable once again and must strengthen their ways of operating if they are to protect the safety of their inhabitants – especially the poorest who are often the most exposed and least resilient in the face of disasters – and safeguard their economic, social, environmental and cultural heritage.

This is why this issue of The Veolia Institute review - FACTS Reports focuses on developments that strengthen the resilience of our cities and urban stakeholders' capacity to ride with the punches, pick themselves up off the floor and continue to develop, no matter the challenges they face. Looking at examples from emerging and developed economies, this issue is a follow-up to the colloquium on Resilient Cities and Territories organized in 2017 by La Fabrique de la Cité and Veolia Institute at the Cerisy-la-Salle Cultural Centre in northern France.

Resilience is not something that can be tackled on one front. Risks are too varied and consequences too numerous; a wide range of expertise is needed if we are to ward those risks off, limit occurrences and repair damage. This is why it is so important that all stakeholders are included, reaching out to form broader partnerships and strengthen social cohesion. Resilience is never just about concrete, infrastructure and insurance cover.

Cities, assailed as they are by numerous priorities, struggle to take the long-term view when it comes to protecting themselves from events that seem improbable. Worse, the success of a resilience-boosting policy will be invisible: success is when nothing happens. This makes it hard to find funding for costly protective infrastructure that may or may not be called on.

Sadly, crises are more effective than warnings in terms of making us aware of the threats we face and forcing us to provide our cities with the means to prevent potentially disastrous situations. All the more so in the case of "true" crises, events beyond our experience and that undermine even the deepest certainties: Fukushima and Tianjin, Katrina and Harvey, the Mendocino Complex fire, and so on. The past 10 years have witnessed a number of mega-crises with devastating knock-on effects. How can we prepare for and manage these super-crises? By ceasing to cling to outdated doctrines – those Maginot lines that ultimately deliver nothing in the face of extreme need – and instead trying to imagine the unknown as a way to help us to think and react differently. Only by venturing off the beaten track can we invent novel solutions to unforeseen crises.

Resilience can only be judged after the fact, once the shock has been confronted. It is only in overcoming a crisis that a city's resilience can be certified. When Hurricane Katrina ravaged New Orleans in 2005, it highlighted the impotence of the world's largest superpower. But in the aftermath, New Orleans emerged as a life-size open-air laboratory for resilience. History is littered with lost and faded cities, but many others have endured for a thousand years and more – proof that the city can resist trauma in all forms. Even today, cities are re-emerging after decades in decline, phoenix cities experiencing a renaissance.

However much effort we put into prediction and prevention, the extreme and the unimaginable will always find ways into our lives. It is impossible to plan for all the surprises today's world has in store for us. For our cities, it is no longer a matter of predicting the unpredictable, but of preparing to face it – which means becoming resilient.

1. CHALLENGES AND RISKS SPECIFIC TO URBAN AREAS

The first section in this issue seeks to analyze the key risks and challenges, primarily environmental, facing urban areas and examine the consequences these challenges may have on their development.

The notion of the resilient city has developed essentially since the end of the Second World War. Risk has become a central component of modern societies, with the advent of the risk society as imagined by Ulrich Beck in the 1980s. While the post-war period and subsequent Cold War saw the emergence of nuclear risk, the 1970s, when the Club of Rome began to publish its work, marked an incipient awareness of resource depletion. The critical environmental situation became more evident in the 2000s. Cities soon emerged as ideal testbeds for examining resilience, as the introductory article to this issue points out. Not only are cities partly responsible for climate change, they are also the main victims of natural disasters as well as the source of innovative risk-mitigation solutions.

Urban resilience was initially seen in terms of strategies to improve prevention and management of environmental disasters. But not all cities are equal. They do not all face the same risk exposure – coastal cities, for example, are highly exposed – nor do they have access to the same resources for dealing with sudden and unpredictable events – cities in emerging-economy nations have budgets that are markedly more limited. This situation is explained by Mark Pelling, principal investigator for the Urban Africa: Risk Knowledge project, as he demonstrates that climate change impacts cities in sub-Saharan Africa differently from other parts of the world due to the chronic daily challenges they are already dealing with.

Urban resilience is increasingly defined as covering a far wider range of risks, such as technological, terrorist and food security risks, as well as chronic stresses such as population aging or the breakdown of social ties. For example, some cities face issues surrounding unprecedented economic and/or demographic degrowth. As pointed out by Daniel Florentin, assistant professor at ISIGE Mines ParisTech, these "shrinking cities" force us to look afresh at how we perceive the city. The current obsession with immigration and refugees, a situation that will likely increase in intensity over the years ahead as a result of environmental degradation and geopolitics, brings with it a new raft of challenges for leading nations, particularly in Europe. The task is to absorb these flows of migrants and refugees, integrating them into society. In Hamburg, Germany, the Central Coordination Unit for Refugees has rolled out an innovative policy based on access to housing and citizen participation to handle the arrival of large numbers of refugees, as described in this issue by its director, Anselm Sprandel. Guillaume Capelle, co-founder and director of the nonprofit organization SINGA, then examines the resilience and knowledge-sharing opportunities that the arrival of refugees represents for host societies.

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URBAN RESILIENCE:

introducing this issue and summarizing the discussions

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KEYWORDS

- DEFINITION
- LEGITIMACY
- MEGACITIES
- RISKS AND OPPORTUNITIES

Resilience is an issue of increasing importance to city managers and policymakers. The idea first emerged in the scientific world and was then taken up by psychologists and ecologists to describe the ability to resist unforeseen events and return to a pre-event state. Since the turn of the millennium, many major cities are increasingly adopting resilience strategies to plan for and manage a range of risks, not only environmental but also economic, social, food security, and so on. Cities are at the center of the idea of resilience insofar as they are simultaneously part of the problem, as the major source of greenhouse gas emissions, but also potential victims of natural disasters – coastal cities are, for example, vulnerable to hurricanes and rising sea levels. Cities are also the source of future solutions, via, for instance, networks of resilient cities and their capacity to manage problems on a "human scale." There is a measure of disagreement surrounding the term resilience, with some encouraged by its all-embracing nature and others decrying it as simply a catch-all concept. Resilience – assuming that certain strategic, holistic, durability and collaborative conditions for achieving legitimacy have been met – can, however, provide an array of new tools to help foster the emergence of the sustainable and enduring city of tomorrow.

Resilience has emerged in recent decades as one of the core words in the language that structures our era. Just like other often-used yet imprecisely defined notions – sustainability, smart and inclusive being three good examples – resilience is an ever-changing concept that is hard to pin down. The word first gained currency in scientific literature, specifically physics, as a term used to designate the resistance to impact of a material. The term was then extensively picked up by psychologists to describe a similar phenomenon: the capacity to recover after individual or collective trauma. Ecologists use the term to designate an ecosystem's capacity to rebuild itself and restore its balance after being disturbed, as, for example, in the natural regeneration of a forest and its ecosystem after a fire. Used in this way, resilience describes not simply a capacity to resist, but also an ability to recover after a shock and return to a previous state. The notion is also used in the sociotechnical field (at the interface between engineering and social and human sciences) to designate a system's capacity to adjust to unsettling events.

The past decade and a half has seen the term adopted outside purely scientific spheres, where it is now used to describe complex ecosystems such as cities. Resilience has become a big deal for cities, especially since the Rockefeller Foundation sponsored the emergence of the 100 Resilient Cities network in 2013, seeking to assist the world's major cities to overcome the multiple shocks they might increasingly have to face. Michael Berkowitz, President of the 100 Resilient Cities program, defines resilience as "the capacity of a city to thrive in the face of shocks and stresses."

Urban resilience is increasingly essential as the populations of the world's cities continue to grow, with 70% of the global population being city-dwellers by 2050 according to the U.N.,[1] and cities facing greater threats from natural disasters and unprecedented social tensions.

1. URBAN RESILIENCE HAS BECOME A PRESSING ISSUE IN THE FACE OF THE MULTIPLICATION OF RISKS, PARTICULARLY ENVIRONMENTAL

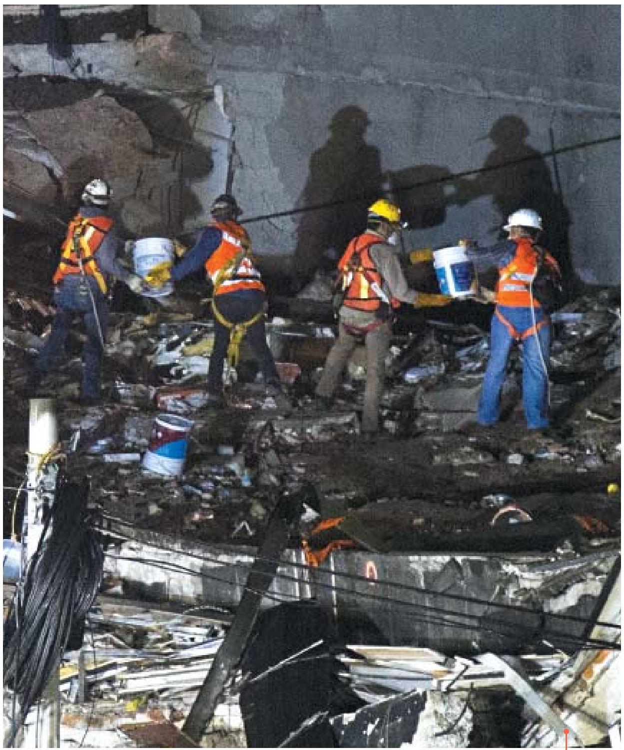
The success of resilience as a concept is above all a manifestation of growing awareness, not to say a degree of pessimism, in the face of natural risks.

The Lisbon earthquake of 1755 is widely seen as a turning point in the history of Enlightenment and the western world's attitude to scientific progress. The earthquake that devastated the city was met with a unanimous response: only scientific progress could avoid disasters of this nature. As Luc Ferry puts it, sciences would "make it possible to predict and, consequently, prevent the sorrows that the absurdity of nature inflicts so cruelly on humans. In essence, the scientific mind allied with an enterprising spirit was going to save us from the tyrannies of materials in the raw."[2]

This control over the world would not only free people from enslavement to natural forces but would, more fundamentally, also enable those same forces to be harnessed for profit: herein lies the idea of happiness, which was considered a "new idea in Europe" at the time.

1 United Nations, *World Urbanization Prospects*, 2014

2 Luc Ferry, *Le syndrome du gyroscope*, Institut Montaigne, 2004



Mexico, September 25, 2017.
Rescue work in a collapsed building

Three centuries later, we find our attitudes to science and nature profoundly altered. In the light of Hans Jonas' essay *The Responsibility Principle*[3] and the emergence of the precautionary principle, progress seeks no longer to be continuous and to harness nature, but simply to avoid the worst case scenario. Disasters are henceforth inevitable and unavoidable. We need to understand how to cope and recover.

As pointed out by Michel Juffé,[4] head of the scientific council of the French Association for Prevention of Natural Disasters, "the success of the word resilience in the prevailing discourse and the media is doubtless highly symptomatic of our doubt, perhaps even our despair, of our chances of achieving a better world. But such fatalism is itself a reaction to the optimism inherent in a rationality rooted in the Enlightenment, the idea that with continuous scientific progress, natural and social phenomena would ultimately be mastered and rendered harmless; it was to be the triumph of prediction and prevention."

The primary explanation for this fatalism is the growing number of natural disasters caused by climate change. It is also the product of the international community's inertia in the face of the radical transitions that are required.

3 Hans Jonas, *The Responsibility Principle*, 1979

4 Michel Juffé, *Resilience of what, for what and to what?* Annales des Mines - Responsabilité et environnement, 2013-14 (issue 72)

FOUR DEFINITIONS OF RESILIENCE

Serge Tisseron, psychiatrist
Extract from his intervention at the colloquium on Resilient Cities and Territories, September 2017

"There is not one but several definitions of the word resilience. The history of the word began in the field of psychology. It is an intrinsic quality of individuals: we speak of resilient children and resilient people. Two approaches claim to offer an explanation: genetic origin and the quality of the early environment. This initial definition brought with it the risk of dividing people into two camps: those who are resilient and those who are not. A second definition of resilience appeared. What if it were a relationship-driven process? Everybody could become resilient providing they were given the help they needed. But the collective is marginalized under this definition, which focuses on relationships of duality, leading to the emergence of resilience teachers. Resilience teaching was even imposed on people with mental illnesses in some hospitals in Canada. This was also the era of resilience-mongers, and an ever-greater number of guidebooks and advice about how to become resilient. The third wave saw resilience defined as a strength possessed by all, and that can manifest in different ways. Resilience became a capacity for reconstruction and rebirth shared by all living species. This third definition opened considerable opportunities to psychology researchers as it made it possible to imagine people's psychological reconstruction as a function of their innate possibilities and environment. The definition brings with it the notion of prevention: if resilience is a strength, then it must be possible to ensure it is exercised under the best conditions. To help find a way between these three definitions, I proposed using three alternate spellings: 'resiliences' to define individual's qualities; 'resiliance' with an 'a' to designate the process; and 'Resilience' with a capital 'R' to designate the strength. We are now entering a fourth period. Resilience is viewed as being collective; we speak of societal resilience. This enables us to include the three mutually exclusive definitions above: they become complementary and together participate in the definition of resilient systems, those in dynamic equilibrium, able to prepare thanks to early warnings and foresight, to resist, to recover and to rebound by learning, adapting and innovating, and finally, to evolve toward a new state of dynamic equilibrium by mitigating the physical and psychological consequences of previous unforeseen events."

RESILIENCE AT THE SOCIOTECHNICAL SCALE: RISK MANAGEMENT AND RESILIENCE ENGINEERING

Eric Rigaud, research associate, Mines ParisTech PSL, CRC
Extract from his presentation to the colloquium on Resilient Cities and Territories, September 2017

"Resilience is associated with a system's capacity to respond and adapt to the appearance of significant threat or severe adversity. The concept of resilience is used to denote the process contributing to an adaptation, the growth path following the appearance of the source of adversity, the result of the process of adaptation, or all of these characteristics.

At the scale of sociotechnical systems, resilience is deployed to discuss the nature and role of individual and collective capacities to adapt and ensure safety. The safety of any system resides in a set of processes designed to provide that system with arrangements to prevent and protect it from a potentially damaging event and to prepare it to deal with and overcome such an event. These arrangements can be physical barriers such as fences, guardrails and embankments, symbolic measures such as posters and signposts, special training to help people adopt safety-first attitudes, or procedures and regulations to govern individual and collective behavior. The specification, design and maintenance of such arrangements require, among other things, identifying sources of adversity with the potential to impact the system, such as unforeseen external events, technical malfunctions, errors, and so on, and drafting a sufficiently precise description to make it possible to deduce the specifications for arrangements needed to manage safety, and the human and financial resources to deploy and maintain them. A system can be deemed safe if all scenarios for events liable to damage it are taken into account, if technical barriers are correctly designed and scrupulously maintained, if procedures are comprehensive and accurate, if operators apply them and if the time, human and material resources needed are available and sufficient.

System safety is challenged by the tendency of sociotechnical systems to move toward greater complexity as well as programs to optimize resources and shrink budgets, shortened production lead-times, and the whole array of changes that organizations are subject to, such as digital transition and environmental transition. This means that actors in a system are confronted with situations of adversity that the system has anticipated. They have to adapt their behavior to obey the procedures and rules associated with these situations. They are also confronted with anticipated situations where no barriers have been planned, or planned barriers prove to be inoperative. In this scenario, they have to adapt their behavior by altering the procedures or improvising. Lastly, they may be confronted with exceptional, extreme and unprecedented situations, when they not only have to improvise but also alter their entire mindset to find a solution.

Resilience engineering aims to understand the different forms of individual and collective adaptation to the diversity of adverse situations that may arise, and to design solutions to allow these adaptations to develop."

2. CITIES: DECISIVE CRITICAL ACTORS IN RESILIENCE

Cities have rapidly emerged as key to exploring resilience, as they are at once partly responsible for the environmental crisis as well as being potential victims of disaster, particularly natural disasters, and the primary wellsprings of solutions.

2.1. URBAN POLLUTION IS THE ROOT OF THE ENVIRONMENTAL CRISIS

By the year 2050, two-thirds of humanity will live in a city.

And cities are at the root of changes to our environment. They consume two-thirds of worldwide energy production and generate over 70% of all greenhouse gas emissions. The latest analysis from C40, presented at the March 2018 meeting of the IPCC, estimates that this proportion is in fact even greater once consumption-based emissions are included.[5] Indirect emissions are rising in the world's most developed cities such as London, Paris and New York. Most pollution in cities in commodity-producing countries of the southern hemisphere is generated by industry and the production of goods subsequently exported to and consumed in the USA and Europe.

2.2. CITIES ARE POTENTIAL VICTIMS OF ENVIRONMENTAL DISASTERS AND SOCIAL TENSIONS

Recent years have seen many cities impacted by natural disasters: Hurricane Michael hitting the coastline of the Gulf of Mexico, the tsunami in Palu in Indonesia, Hurricane Florence along the coast of South Carolina in the USA, a devastating monsoon in Kerala, India, Storm Alberto in Cuba, and so on. High population density means that the human and material cost of natural disasters in urban areas is often extremely high.

Close to 90% of metropolitan areas worldwide are coastal and thus at risk from flooding and violent storms. Climate Central, an NGO, estimates that almost 275 million people currently live in areas at risk of disappearing under rising sea levels in the event of a 3°C rise in global temperature. In this scenario, 5.2 million people would be impacted in Osaka, 3 million in Alexandria and 1.8 million in Rio de Janeiro. Water levels rose around 20 centimeters during the 20th century, with some estimates saying they will rise close to 1 meter by 2100. In France, recent loss of life caused by rainstorms hitting the Aude department caused many to criticize the unbridled urbanization of the past half-century that has seen significant building occur in flood-risk zones. One in four people in France currently live in an area liable to flooding.

Cities are also hotbeds of socioeconomic risks because of the inequalities they exacerbate. On the one hand, cities in OECD countries contributed 60% of all job creation and GDP growth over the past 15 years, and household revenues are on average 18% higher in cities than in other areas.[6] But within cities the wealth gap continues to grow and the challenge of improving social inclusion is now a worldwide issue. The recent OECD report *Making Cities Work for All* showed that in all OECD countries, income inequality in metropolitan areas is higher than the national average. And the bigger the city, the greater the inequality. Metropolitan areas with over 1.5 million inhabitants show higher Gini coefficients in terms of overall disposable household income. But inequalities in cities go beyond household revenues, impacting also access to essential services: a third of city-dwellers in emerging economies live in informal settlements. The ongoing migration crisis also represents a shock of almost unprecedented scale that cities in Europe are having to grapple with. The example of the German city of Hamburg, presented in this issue by Anselm Sprandel, head of Hamburg's Central Coordination Unit for Refugees, shows how, from 2015, the city authorities focused on twin objectives: accepting and housing refugees to avoid leaving people homeless while simultaneously trying to ensure as little disruption as possible to the daily lives of the city's 1.8 million residents. In some cities degrowth is also at the origin of greater levels of inequality, leading to a far-reaching reassessment of urban planning policies. Whether in European cities, as described in the article by Daniel Florentin, or in Japan as covered by Professor Hidetoshi Ohno's article, urban, demographic or economic shrinkage brings a change of paradigm to cities that have long been viewed through the prism of growth and wealth creation. The breakdown of social ties in cities is a further issue that cannot be ignored.

As a result, the concept of resilience has recently been expanded to include the social dimension, such are the potentially unsustainable risks represented by the yawning wealth gap.

2.3. CITIES ARE HOTBEDS OF SOLUTIONS AND EMERGING AS THE PRIME MOVERS FOR CHANGE

Recent years have seen cities worldwide assume greater responsibility for tackling these challenges: gathered at the Paris Climate Conference, they have since formed global networks and associations, launching concrete initiatives to accept refugees and protect the environment. The U.N. finally recognized the power and strength that cities represent. Countries are adapting to new realities and city mayors are increasingly playing a role as legitimate and active leaders, with their views listened to on the international stage.

"CITIES HAVE EMERGED AS KEY TO EXPLORING RESILIENCE, AS THEY ARE AT ONCE PARTLY RESPONSIBLE FOR THE ENVIRONMENTAL CRISIS AS WELL AS BEING POTENTIAL VICTIMS OF DISASTER, PARTICULARLY NATURAL DISASTERS, AND WELLSPRINGS OF SOLUTIONS."

5 C40 Cities, *Consumption-based GHG emissions of C40 cities*, March 2018

6 OECD, *Making Cities Work for All*, 2016

The first Global Climate Action Summit, held in mid-September in San Francisco, is highly symbolic of the growing role played by cities as well as illustrating the importance of all non-state actors in seeking solutions to problems facing the world. Attendees at the summit were, therefore, generally in favor of a city-business-civil society governance model.

We are seeing an increasing number of city alliances and coalitions addressing topics that relate to resilience. They include C40, founded in 2005 and whose members include over 80 major world cities, and the 100 Resilient Cities network set up by the Rockefeller Foundation, which sponsors a network of Chief Resilience Officers, a high-level cross-function role in city halls designed to help formulate each city's resilience strategy.

But this proactive role for cities can lead to some ambiguous situations. On the one hand, forward-thinking megacities increasingly have the right structures in place and can be drivers for solutions. At the San Francisco summit, C40 emphasized the encouraging results shown by the strategies of 27 cities[7] in terms of combating global warming and reducing greenhouse gas emissions. These cities have managed to achieve a 2% annual reduction in GHG emissions by cutting the amount of fossil fuels used, optimizing new-build constructions, encouraging residents to leave the car at home, and cutting overall volumes of waste while also increasing the amount that gets recycled.

On the other hand, resilience is now something that needs to be addressed by smaller towns and cities. As Michael Berkowitz explains in an interview in this issue, the roots of the 100 Resilient Cities initiative lie in a determination to bring together a hundred cities with the power to inspire thousands of others of all sizes. The network currently includes major world cities like Paris, New York and Jakarta as well as modest towns like Vejle in Denmark (50,000 residents). More work is needed on differences experienced by cities in emerging nations compared to their developed nation counterparts, as they face a toxic cocktail of very limited resources and greater vulnerability. Mark Pelling, principal investigator on the Urban Africa: Risk Knowledge project, shows in this issue how the cities of sub-Saharan Africa must face an accumulation of risks, meaning that the slightest alteration in climate coupled to already inadequate infrastructure can quickly lead to deteriorating living conditions for local people.

3. THE LIMITATIONS OF TOO WIDE A CONCEPT

Paradoxically, the very success of the concept of resilience risks to undermine its effectiveness. Michel Juffé sums up the current situation like this: "'Resilient' is too often used as a qualifier applied to anything: to be considered as being in good shape, a person, institution, region or firm merely needs to be resilient."[8]

The notion of a resilient city has become particularly difficult to define because it has become so multi-faceted. There are two schools of thought: enthusiasts who feel that the inclusive nature of the notion makes it more useful, and skeptics who worry it is simply a catch-all notion, ill-defined with little substance beyond generalities. The skeptics feel that a better definition of resilience is needed, for urban resilience in particular: does resilience have to be all-encompassing (the city must be resilient in all ways) or specific (resilient infrastructure, resilient to natural disasters, etc.). It is also becoming necessary to measure resilience; how can we measure a city's resilience without limiting it to only quantifiable aspects? Michel Juffé provides several pointers, encouraging people to systematically ask themselves three questions: "resilience of what, for what and to what?"

4. CONDITIONS FOR SUCCESSFUL RESILIENCE: STRATEGIC, HOLISTIC, DURABILITY AND COLLABORATIVE

4.1. DEFINE STRATEGY AND PRIORITIES

Because it is an all-embracing notion that extends to numerous fields and areas of action, designing resilience for a city requires a precise strategy to be defined, setting out priority action areas. This is what cities do when they appoint a Chief Resilience Officer. Arnoldo Matus Kramer, Chief Resilience Officer for Mexico City, in his interview describes his role as follows: "delivering the resilience strategy of a city and monitoring and following up its implementation." The goal is to set long-term priorities. In New Orleans, Veolia and the Swiss Re reinsurance firm, facilitated by the Rockefeller Foundation, signed the first ever public-private partnership for urban resilience as part of the post-Katrina process. In this issue, Laurent Auguste, a member of Veolia's Executive Committee, and Ivo Menzinger from Swiss Re, look back on the partnership and methodologies used to analyze risks and recommend priority actions. A similar process occurred in Copenhagen, and this is described in the second section. The city has changed profoundly in recent years, building its resilience strategy around the themes of environmentally friendly and inclusive urban development, focusing on revitalization of declining neighborhoods, creating more open spaces, encouraging the use of bicycles and public transportation, and so on.

4.2. TOWARD A HOLISTIC APPROACH TO RESILIENCE

Resilience encompasses far more than just infrastructure and public services optimization. As Serge Tisseron points out,[9] resilience is

7 Barcelona, Basel, Berlin, Boston, Chicago, Copenhagen, Heidelberg, London, Los Angeles, Madrid, Melbourne, Milan, Montreal, New Orleans, New York, Oslo, Paris, Philadelphia, Portland, Rome, San Francisco, Stockholm, Sydney, Toronto, Vancouver, Warsaw and Washington

8 Michel Juffé, *Resilience of what, for what and to what?* Annales des Mines - Responsabilité et environnement, 2013/4 (issue 72)

9 Serge Tisseron, Preface – *Résiliences : comment s'y retrouver ?* in *La Résilience*, PUF, Que sais-je, 2014

created during four key stages – preparing for the shock, resisting, recovering, and consolidating the rebuilt situation – which aim for long-term, not precarious, re-establishment. Seen in these terms, resilience is a cycle rather than just the post-disaster reconstruction phase. The holistic approach to resilience involves considering not only environmental and infrastructure risks, but social and societal risks too. In Roubaix, a city hard-hit by deindustrialization and economic downturn, La Condition Publique, a creative space that is part museum, part social center and part re-socialization center, is contributing to urban regeneration in the Pile neighborhood as well as fostering encounters and ties between local people. For its director, Jean-Christophe Levassor, the space gives residents a chance to engage with subjects of shared importance, giving them a voice in designing new policies for regeneration and urban resilience in their neighborhood.

4.3. IDENTIFYING BUSINESS MODELS THAT WILL DELIVER LASTING RESULTS

Finding the right economic equation for resilience is vital if the approach is to prove lasting. When a city is struck by a natural disaster, it usually acts as insurer of last resort, a situation no longer sustainable in a world characterized by the increasing severity of natural disasters. First, spending on resilience is not a very attractive prospect for cities. It requires spending money to prevent an event that may or may not happen. The issue of business models also impacts the overlap between different horizons: short term for emergency situations and political timeframes, and longer term for risk prevention. Several economic actors are now engaged with studies of business models for resilience. Insurance companies certainly have a primary role to play here. Innovative financial mechanisms such as resilience bonds are emerging, as Shalini Vaijhala and James Rhodes from re:focus partners explain. These bonds have been designed to finance risk-reduction projects via a resilience credit that transforms adverse incidents avoided into sources of revenue.

4.4. COLLABORATIVE APPROACH

Resilient cities were originally driven by a vertical top-down mindset, where public authorities working with ICT companies delivered centrally designed smart cities via the introduction of digital technologies into city policies and infrastructure. But resilience demands the rapid emergence of new ways to live, work and consume in the city. Therefore, these early approaches were soon overtaken by new mindsets that set out to enable citizen-users to share goods and services quickly and simply. This is the platform mindset that allows the “multitude” to interact, as described by Henri Verdier and Nicolas Colin.[10] No longer is the resilient city the result of a centralized strategy designed by public authorities; rather, it is the consequence of interactions between city-dwellers who now have the ability to self-organize. The city-as-platform helps residents to get in touch with each other and helps to accustom people to risk and resilience. The objective is to move from resilient cities to resilient citizens.

The example of Facebook groups, shown in this issue, which in the USA helped to organize assistance and mutually support hurricane-affected people, demonstrates the new mindset driving self-organization and building bridges between public authorities – emergency services in this case – and residents. A similar example is the nonprofit organization called SINGA, presented by its director Guillaume Capelle, which leverages citizen networks to help refugees integrate into new cities. Later, Gaël Musquet describes the fundamental pre-requisite to this self-organization mindset: accustoming people to risk. This is what led him to set up a network called Hackers Against Natural Disasters in 2011, helping people to become more resilient.

“BUT RESILIENCE SHOULD BE THOUGHT OF IN TERMS OF OPPORTUNITIES: TO IMPROVE EXISTING INFRASTRUCTURE, TO INVENT NEW BUSINESS MODELS AND TO FIND NEW WAYS OF COLLABORATING BETWEEN PUBLIC, PRIVATE AND CIVIL SOCIETY ACTORS.”

This tension between vertical and horizontal mindsets lies at the heart of the construction of resilient cities. Neither seem sufficient when taken in isolation: self-organization risks being sub-optimal, and top-down profoundly undermines citizen appropriation. Deciding how best to combine these two approaches is the biggest single challenge currently facing public and private actors.

CONCLUSION: LOOKING BEYOND RISKS TO SEE OPPORTUNITIES OFFERED BY RESILIENCE

The notion of resilience is heard more and more frequently and is now part of the common parlance of city policymakers and managers. In a world characterized by environmental, economic and social phenomena of ever-increasing criticality, risk prevention and a culture of forward planning are key factors in ensuring that systems can resist and continue. Related to the notion of risk, urban resilience often surrounds issues of disaster prevention and management. But it should be thought of in terms of opportunities: to improve existing infrastructure, to invent new business models and to find new ways of collaborating between public, private and civil society actors, and to promote social ties in cities. Ultimately, urban resilience provides an array of new tools to help foster the emergence of the sustainable and enduring city of tomorrow.

10 Henri Verdier, Nicolas Colin, *L'âge de la multitude, entreprendre et gouverner après la révolution numérique*, 2012

BREAKING THE CYCLE OF RISK ACCUMULATION in Sub-Saharan Africa

By Mark Pelling,
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View of Nairobi - ©Hayley Leck

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KEYWORDS

- RESEARCH
- SOCIAL FABRIC
- CAPACITY BUILDING

Urban Africa: Risk Knowledge is a three-year research and capacity building programme funded by DFID and ESRC that works in nine Sub-Saharan Africa cities. It involves academic and NGO partners from developed and developing countries and aims at breaking cycles of urban risk accumulation by bringing together science, policy and civil society actors in the production of knowledge and action. The objective of the programme is to better understand the urban processes that place families in exposure to hazard and in a lack of capacity to cope with the impact of these hazards.

Current trends are going towards increasing vulnerability since existing infrastructure and services are unable to cope with growing population and climate change is adding stress to these infrastructures. The belief that drives the programme is that for resilience to be built that meets the needs of the urban poor, the starting point is to build strong relationships that can lead to collaborations between communities and city authorities, inform decision-making, inspire populations to manage their own risk and hold government to account. In Kenya, where the research was implemented, local governance structures were created to implement a community-based risk management approach deployed by residents.

INTRODUCTION

The urban poor in Sub-Saharan Africa are in a cycle of risk accumulation and of deepening vulnerability due to continuous experience of underdevelopment and lack of infrastructure in poor neighbourhoods. Risk is a cumulative process that leads to degraded health, to social tension, fragmented community action, etc. Urban Africa: Risk Knowledge chose to build strong community networks, believing this would be the basis for improved infrastructure and significant vulnerability reduction and better coping with localised disasters.

Urban Africa: Risk Knowledge is a three-year research and capacity building programme funded by DFID and ESRC that works in nine Sub-Saharan Africa cities to break cycles of *urban risk accumulation by bringing together science and policy actors in the production of knowledge and action. The objective is to better understand the urban processes that place families in exposure to hazard and in a lack of capacity to cope with the impact of these hazards, with the belief that vulnerability is a direct consequence of development failure.*

The project uses an innovative research methodology by involving communities in the data collection. It aims at building governance structures that will enable communities to assess scientifically the risks they are exposed to and roll out that methodology in autonomy even long after the three-year research project is completed.

1. CONTEXT: RISKS AND VULNERABILITIES IN URBAN SUB-SAHARAN AFRICA

It is striking that most development efforts in Sub-Saharan Africa are focused on rural areas, where the general wisdom says the challenges are in access to water and sanitation, electricity and agricultural practices. Still, the future of Sub-Saharan Africa is urban. Urban areas grow very quickly even though infrastructures are already struggling to meet current demand. The project looked at two particular issues in its attempt to assess risks and vulnerabilities in Sub-Saharan Africa: (1) the impact of climate change and (2) the difficulty to monitor hazard through data collection.

1.1. CLIMATE CHANGE: AMPLIFYING CHRONIC STRESSES

Resilience is often described as the ability to bounce back after shocks or in the face of chronic stresses. In Sub-Saharan Africa, populations are already facing chronic stresses due to the failure of current infrastructure and climate change is amplifying those stresses. The impact of climate change in Sub-Saharan African cities is therefore very different than in South East Asia or Latin America. In those regions, cities are vulnerable to hurricane. Climate change there increases the frequency and strength of catastrophic weather events. In Sub-Saharan Africa, populations are highly vulnerable due to unmet development needs and each small perturbation in climate leading to flooding or else has a strong impact on populations, leading to worsening of livelihood conditions and even higher vulnerability. With climate change, current weather problems will be more persistent, and vulnerability of population will deepen. Climate change projections show increasing heat and rainfall but that the primary driver for risk will be rooted in development failure.

Current trends are going towards increasing vulnerability because existing infrastructure and services are unable to cope with growing population under current climate change. Adaptation will not be about coping with new shocks as much as solving current development issues.

1.2. STARTING FROM THE BEGINNING: HAZARD MONITORING

Most countries in Sub-Saharan Africa do not have systematic data collection so there is no single source of data to know for example the number of deaths associated with a hazard event. That data needs to be built and on a timeline that makes it relevant.

This gap in data limits the understanding of the nature and scale of urban risks and how urbanisation is influencing its social distribution, and future urbanisation will provoke the same vulnerability issues.

One data collection methodology, called Desinventar, is gaining momentum among governments and donor agencies. It consists in looking at everyday newspapers to identify events and cross-reference them with existing reports from NGOs or government. The methodology has been used for the Urban Africa: Risk Knowledge research programme in three cities (Ibadan, Niamey and Nairobi) in partnership with the Red Cross and universities. This methodology is highly dependent on what media decide to profile. So on top of that methodology, the University of Ibadan convened, in Ibadan, households across the city to interview them to report on their experience and observations in the area of what were the most frequent hazards.

The three main hazards reported in the newspaper methodology and the household interviews were the same: traffic accidents, flooding and violent crimes, but the ranking was different. Violent crimes were first in newspaper and last in the household interviews. It is quite easy to understand why newspapers would profile violent crimes more, but it shows the importance of being careful with this data collection methodology, even more so as it is being used by a wider range of actors.

"URBAN AFRICA: RISK KNOWLEDGE IS A RESEARCH AND CAPACITY BUILDING PROGRAMME TO BREAK THE CYCLE OF URBAN RISK ACCUMULATION IN AFRICAN CITIES."

2. BUILDING RESILIENCE: THE IMPORTANCE OF SOCIAL FABRIC

2.1. ISSUES WITH CURRENT RISK MANAGEMENT STRATEGY

The work of the Urban Africa: Risk Knowledge programme is based on two overarching concepts:

- The first is that resilience rests on relationships between actors. Those pre-existing relationships are what will make them collaborate, build a common vision of what the real obstacles are for service provision and how to reduce exposure to risks.
- The second belief is that local governments and community groups can make improvements in places where the poor live when they work together. Though incremental gains will not solve the structural weaknesses of city infrastructures, they are transformative in that they break the cumulative process of risk and strengthen relationships between actors. But risk management is mainly about engineering in its current form and misses the social context that builds vulnerability as part of this process. Engineering is no less important, but is only part of the solution for long-term and pro-poor resilience building in cities.

What makes the Urban Africa: Risk Knowledge research programme innovative is that it was not about investigating how hazard can be technically controlled. Instead, the programme tried to understand the urban processes that place families in exposure to hazard and in a lack of capacity to cope with the impacts of those hazards. This approach aimed to focus on one of the root causes of vulnerability or resilience, which is the social fabric and the relationships that allow for strong governance structure.

2.2. NAIROBI'S APPROACH TO BUILDING RESILIENCE

One collaboration within Urban Africa: Risk Knowledge was undertaken in the Mukuru Special Planning area in Nairobi, Kenya: 100,000 households live in this area, mainly renting places from private landlords. It is exposed to fire outbreaks, flooding, poor air quality and soil pollution as the land is reclaimed industrial land.

The Nairobi City County Government designated this area as a Special Planning Area, and after a long discussion they formed a partnership with a local trust of Slum Dwellers International (SDI), a network of community-based organisations of the urban poor. Together they identified a number of key planning issues. One of them was environment. Urban Africa: Risk Knowledge was asked to join the partnership at this stage on environmental monitoring. The research on mapping and monitoring hazard was a way to involve communities in projects dedicated to improving their living environment. The objective for our research programme was to build the governance structures and methodologies that will enable communities to assess scientifically the risks they are exposed to and roll out that methodology more widely, without our support.

What has been done was facilitating the building of saving groups, who pool their money to save money and invest in members' projects. Members of each saving group are elected to participate in the neighbourhood committee and from these committees, representatives join the Mukuru Special Planning Area governance board. Our intervention was in forming the saving circles to allow seven of these neighbourhood groups to be formed to feed into that governance structure. It is only once this structure is in place that there will be an effective base to engage with the methods and data generated by research.

Once the groups were formed, together with the University of Mzuzu in Malawi we trained slumdwellers in a community-based risk assessment methodology designed by the University. The residents then went out to deploy that methodology. Even though this is unusual for an academic research project, it was worth the investment. First to prove the Mzuzu University methodology has an impact and second because, once trained, the governance structure remains. Even when people have forgotten about this risk assessment project, they are still able to intervene in the governance process.

A very positive outcome is that the local SDI trust has managed to raise money on its own to roll out that methodology in other places

THE EXAMPLE OF SOLID WASTE MANAGEMENT

Urban Africa: Risk Knowledge did specific work on solid waste management because some infrastructure are core drivers of vulnerability, and solid waste management is one of them. Improving Solid Waste Management is for instance key to reduce flooding from blocked drainage as well as impacting directly on the health impact of local flooding.

In Dakar, Mombassa and Nairobi, the research programme looked at the political economy of solid waste management to understand why the city was underprovided. The first thing was to identify technical solutions to improve service provision. As solutions existed, but were not implemented, political dynamics were investigated as well. In Nairobi, ownership of the solid waste management collection system, ownership of land and dumpsites are vested interests. Those interests are so powerful that any alternative processes are very hard to achieve. This is an indication that vulnerability and access to service provision is not only a matter of technical solutions but also political dynamics and social fabrics.

View of Nairobi - ©Hayley Leck

across Mukuru. This means the programme is now independent and running on its own.

In this Nairobi example, two main reasons explain why the project was a success.

First of all, the Nairobi City County Government was involved as a partner and so supported our joint research so we were able to do that project, asking for training and support for the community group. Our intervention fits in at a very early stage in a project. It seems important to be involved from the beginning, whereas local governments often do not ask for support at that stage. They will rather ask for support from donors once the risk reduction project is already decided. If projects are tightly tied to local governments or communities, both can be quite protective of their methodologies and then our work would be solely to provide support. In Mukuru we were able to influence the methodology and the governance structure.

Second, it was striking that networks of community groups such as SDI have impressive capacity. In some places we thought that as academics we could provide technical support in Geographic Information System (GIS) and vulnerability mapping, but they had already been doing it for a while. This is very encouraging because this means civil society has enough maturity to fill the gaps that local authorities leave in terms of measuring risk, census data and measuring people's living conditions and their exposure to risks such as air pollution. While we globally understand the risks well, mapping them locally and understanding local vulnerability is a different story.

3. LESSON LEARNT: MAIN CHALLENGES TO BUILDING RESILIENCE

3.1. FRAGMENTED NATURE OF GOVERNANCE

While in the case of Mukuru there was strong support at the highest level, the fragmented nature of governance meant it took a long time to implement the project. For example, the city initially requested that we facilitate the Nairobi risk partnership, an initiative for different departments to talk together around risk management.

"RESILIENCE RESTS ON RELATIONSHIPS BETWEEN ACTORS. THOSE PRE-EXISTING RELATIONSHIPS ARE WHAT WILL MAKE THEM COLLABORATE AND BUILD A COMMON VISION ON HOW TO REDUCE EXPOSURE TO RISKS."

Recognising that disaster is really an outcome of failing infrastructure, the idea was that all agencies needed to work together. We offered to organise workshops and meetings and to set up the first meeting, which took over 18 months due to changing government and more generally the fragmented nature of local government. The fragmented nature of governance is unfortunately quite common in emerging countries.

3.2. POLITICAL INVISIBILITY OF CAPACITY BUILDING

While relationships are at the core of reducing vulnerability, they are much harder to track than built infrastructure and they can disappear very quickly, so cities find it politically easier to invest in infrastructure than relationships. You can borrow money to build infrastructure but to maintain relationships, the township needs to dedicate human resources. You need city workers to go in the field and work with communities. But human resources are a current expenditure issue and resource-constrained governments have trouble finding the financial resources to fund that.

But in comparison with the amounts invested in big projects, money required to maintain those relationships with community groups is very small. So, for mayors, it may be a matter of framing the projects in terms that make sense for government and donors, showing how such investments are necessary to building infrastructure in an inclusive manner.

CONCLUSION

City planners are faced with the challenge of providing services for newcomers even though infrastructure is already overstretched. The social infrastructure is what will determine newcomers' access to opportunities and services.

One way to deal with that is to prepare people from their childhood to be active community members and role models. There is an opportunity to educate them in a culture of relationships and networks so that the social fabric is strong enough to take in a big increase in population.

THE CHALLENGES OF DEGROWTH IN CITIES

By Daniel Florentin,
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Daniel Florentin studied geography at the Ecole Normale Supérieure and completed his PhD in territorial development and urban planning at Paris Est University. He also has an MSc in water science from Oxford University. Since 2016, he has been an assistant professor at the Mines ParisTech Higher Institute of Environmental Engineering and Management (ISIGE). His work concentrates on urban degrowth and changing uses of urban utility networks.

KEYWORDS

- DEGROWTH
- SHRINKING CITIES
- UTILITY NETWORK

Impacted by complex processes of deindustrialization and sidelined by economic globalization, more and more cities are seeing the emergence of various forms of urban degrowth, both demographic and economic. Cities have long been conceived and designed with growth as the driving factor. Any deviation from this growth-led trajectory was seen as accidental, cyclical and temporary. Urban planners were meant to think solely in terms of future extensions and return to growth, not in terms of management of existing systems.

The crisis may be slow-burning and hard to spot, but it calls for changes in the ways the urban fabric is shaped and in planning practices. Against a background of ever-greater budgetary restrictions, one key to reinventing these practices is the search for new technical, organizational and territorial responses and new arrangements between stakeholders to create new value in territories and utility networks.

Certain local government authorities have started to develop these kinds of approaches, whether to incorporate degrowth in their strategies for the city, repair their housing stock or adapt their utilities, water networks being one example. If programs of this type are to succeed in strengthening urban resilience, the challenge is to find ways to ensure that they change actors' perceptions of urban potential while simultaneously avoiding exacerbating socio-spatial inequalities.

INTRODUCTION

City planners and politicians have long taken the view that the trajectory of a city's evolution should and could only be seen in terms of growth, whether economic or demographic. This is what sociologist Harvey Molotch meant when he referred to "the urban growth machine" (Molotch, 1976): historically, the driving force for cities has been growth and the idea that growth is constant.

Yet some territories have experienced, and continue to experience, urban crises that are far from accidental and very far from transitory. New terms have started to appear to describe *this lasting change of direction, such as "shrinking cities, legacy cities" (Mallach, 2000). Other actors involved in the urban fabric have sought a more positive vision, seeking to identify "phoenix cities" (Power, 2013).*

All these terms speak of a transformation: degrowth in cities is not a passing phase, it is clearly a new urban reality. Degrowth requires us to reopen the urban planners' toolbox and develop a language that incorporates these processes over the long term. It poses new challenges to local governments and other actors involved in the urban fabric, such as major industrial companies, the construction industry and users.

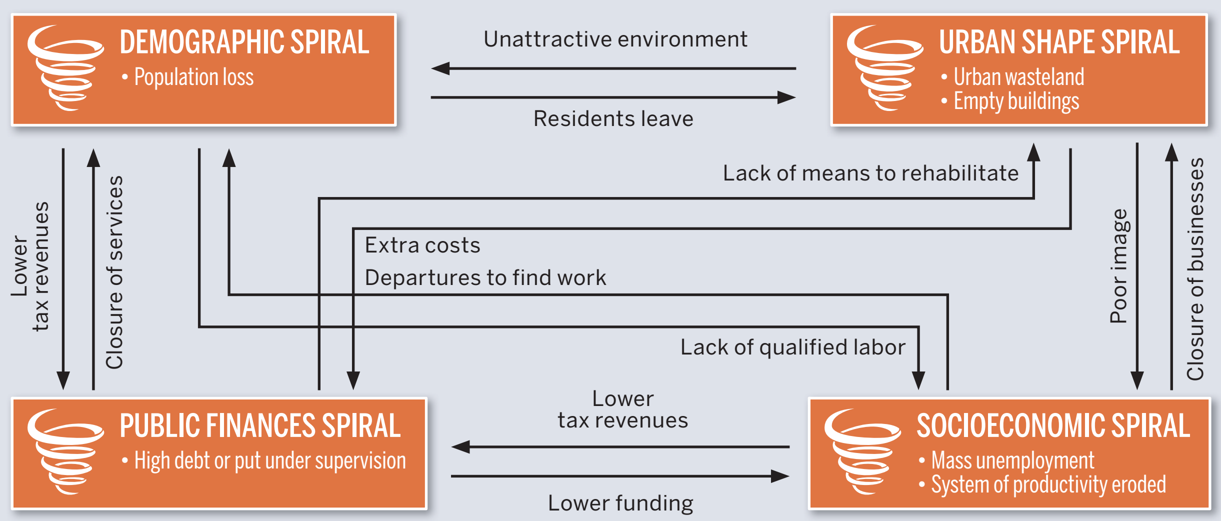
1. SO WHAT IS URBAN DEGROWTH?

Cities engaged in degrowth are subject to an accumulation of processes, each a self-fueling spiral (figure 1). These processes are not new, but have taken on new impetus over the past two decades or more, accelerated by the effects of globalization. A shrinking city is thus a city where processes of demographic and economic decline accumulate (Fol and Cunningham-Sabot, 2010) to a greater or lesser extent but over a relatively lengthy period, very often in conjunction with a crisis in local government finances. Turin, for instance, has lost over 25% of its population and more than 130,000 manufacturing jobs since the 1970s. Its urban trajectory took a sharp turn in a new direction, obliging municipal authorities to alter their strategies and their approach to producing the urban fabric.

The phenomenon can be found in most cities with an industrial background, on every continent – countless examples in the USA, Japan, Brazil and China have been studied by researchers from the Shrinking Cities International Research Network – and occurs in particularly acute form in most eastern European cities. The transition to post-socialist systems acted as a catalyst for this involuntary degrowth. It impacted major cities like Bucharest and Brno, but the impact was particularly strong in small and medium-size towns. Some towns in eastern Germany lost over a third of their population in just a few years. A town such as Frankfurt-on-Oder on the border with Poland has seen its population fall from 88,000 in 1990 to 58,000 today. Another small town, Hoyerswerda, has even seen its name become synonymous with a sort of syndrome: in the 1980s, it was the town with the youngest population anywhere in East Germany, but by the 2000s it was the town in (united) Germany with the oldest population. People who stay behind tend to be the oldest or the least mobile, which in turn exacerbates social and generational disparities between shrinking cities and thriving cities. Ageing in Europe has its own geography too, and shrinking cities are often cities with ageing populations.

Urban degrowth also affects the built environment in the form of abandoned industrial and urban plots and empty housing. The proliferation of empty housing and wasteland has led some planners to talk of the "perforated city" (Lütke Daldrup, 2001). In the German city of Leipzig, despite recent improvement in its attractiveness, some streets in the east of the city remain scarred by long corridors of partially or completely empty buildings. This situation not

Spirals of urban degrowth



Source: Daniel Florentin, Jean-Benoît Bouron, Géoconfluences 2016

Figure 1

only makes it harder to maintain public spaces, it also impacts delivery of city services since they are often predicated on a certain population density to work properly. This also points up the fact that, within the same territory, it is quite possible for neighborhoods that have regained their attractiveness to co-exist alongside other more depressed areas. The resilience that is possible in these territories sometimes occurs only selectively, to the detriment of certain ever-more disadvantaged neighborhoods, creating a lame phoenix instead of a resurgent hydra.

This accumulation of processes often creates cities and towns with impaired accessibility, whether to municipal services, stores and leisure facilities, or to a buoyant employment market and to some economic and social mobility.

2. URBAN DEGROWTH EXTENDS TO NEW DOMAINS: SHRINKING NETWORKS

Degrowth thus encompasses visible territories, representing the dark side of globalization. It also has invisible territories, emerging new domains that call for new responses from cities. A number of degrowth processes have the effect of destabilizing normal operations in different types of infrastructure, notably city water and energy utility networks. This makes itself evident in the lower consumption of water or energy that we are seeing in many cities in Europe and, increasingly, in North America and Japan. Paris has seen its water consumption fall by over 20% in total and per resident over the past two decades, and Berlin, a city that has experienced strong urban degrowth, has seen consumption fall over 40% during the same period. This decrease, which may at first sight seem beneficial in terms of conserving resources, is in fact a far more complex phenomenon, embodying a number of new issues: decreased water consumption raises the water table and can threaten underground structures in cities; it can also lead to the emergence of new health problems caused by stagnant water in pipes.

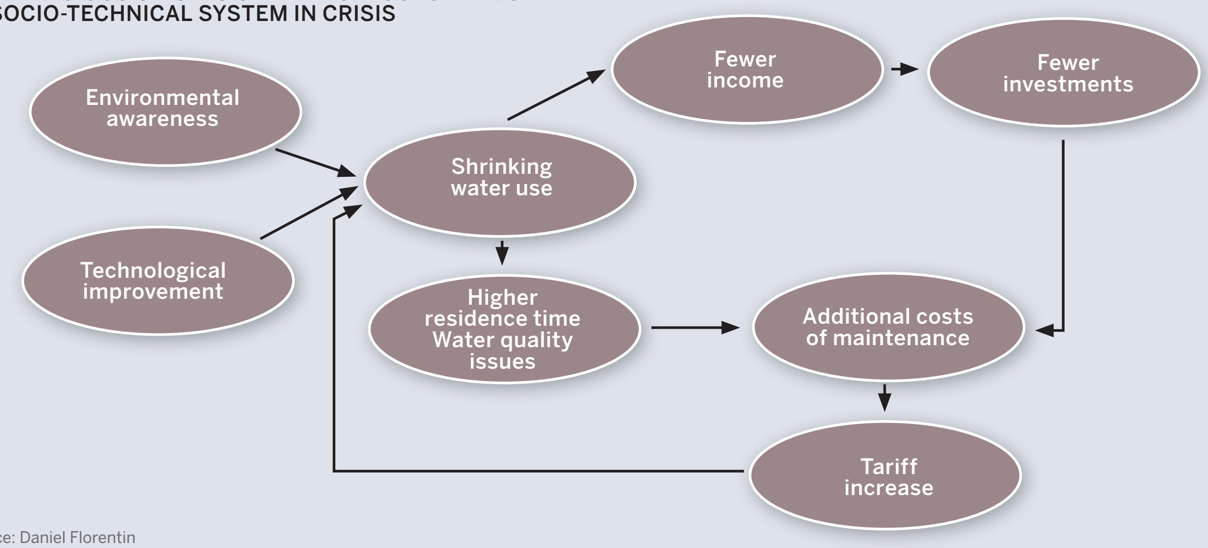
The pattern of lower water consumption seen since the 1990s and the noticeable drop in domestic electricity use since 2011 are symptomatic of the fact that the infrastructure in place to supply these utilities is progressively becoming too large for the user base. This in turn generates additional network maintenance costs for operators of city utilities, leading to them imposing higher service costs on what is often a smaller number of users. In other words, the shrinking network phenomenon requires us to rethink the technical, economic and spatial balance that has historically governed the provision of utility services in the city.

Degrowth in utility networks therefore creates new forms of vulnerability (Florentin, 2015) that impact all components in the network, from operator to user, including pipework (Moss, 2008 and Figure 2 for the water example).

In this domain, as in others, the trend for ever lower consumption is certain to become more pronounced, since the process now features in most energy transition regulations. It is, in this sense, an indication that a new operating model for urban technical services is emerging in an ever-growing number of territories (Florentin, 2018). This in turn raises fresh challenges for the various actors involved in these services and requires designing new economic models, while reconsidering the traditional balance that exists between territories and territorial actors.

Challenges of infrastructural vulnerability. The water network example

THE VICIOUS CIRCLES OF INFRASTRUCTURAL VULNERABILITY:
SOCIO-TECHNICAL SYSTEM IN CRISIS



Source: Daniel Florentin

Figure 2

3. DEGROWTH: AN OPPORTUNITY TO RETHINK THE SOCIAL CONTRACT IN THE CITY?

Degrowth-related phenomena are evidence of a context that local government and economic actors often have no experience of, obliging them to reinvent the tools they use to create the urban fabric and to alter professional practices previously predicated on the growth paradigm alone.

A number of local government authorities have been quick to address these issues. One of the difficulties, applicable to city planning as well as utility networks, lies in grasping the reality and long-term nature of the phenomenon. Against a background of growing local government budgetary restrictions, urban degrowth can be a source of further financial pressure, whereas it actually provides opportunities for rethinking public-sector actions.

This explains why the town of Roubaix in northeastern France opted to incorporate the reality of urban degrowth in its overall urban strategy. The choice involved, in particular, seeking to find new uses for vacant spaces and attempting to identify new pathways in the shift toward a "territorial care" mindset and away from the conventional approach to equipping and developing the city.

In Leipzig, this also took the form of facilitating a number of initiatives promoted by other project backers that aimed to foster new uses of the city and new ways of redeveloping a territory. Essentially, the city authorities backed citizen rehabilitation projects for a number of vacant residential buildings, such as the *Wächterhäuser* (house guardian) initiative, where tenants (who are often artists using the premises as studio space) undertook to restore the buildings themselves in return for a notional rent of one euro. Numerous other initiatives to reimagine public spaces, or develop new ways to grow and eat food in cities, have also been an opportunity to look afresh at urban planners' traditional toolboxes, devising alternative ways to enhance space in the city. Cities experiencing degrowth processes are therefore often seen as being fascinating testbeds for new urban experiments: limited resources oblige stakeholders to turn to new financing mechanisms and alternative institutional arrangements, leading to the emergence of new ways of producing the urban fabric.

When it comes to utility networks, incumbent operators have also had to review their technical and economic models to adapt to emerging degrowth processes. Initiatives launched by utility operators range from rescaling certain networks to new forms of pooling resources, and a more in-depth quest for synergies between business activities or even city services. These transformations, resource pooling in particular, have made it possible to look afresh at ways of producing solidarity-centered territorial development. In many places in eastern Germany, but also in certain parts of France or elsewhere in Europe, lower consumption has been used as an opportunity to revise pricing structures on a new scale, backed by new technical interconnections. In Magdeburg, the capital of Saxony-Anhalt, this has taken the form of the adoption of an infra-regional solidarity tariff for water. Under this arrangement, the city center pays slightly more for its water than it would have if it was the sole recipient of the supply, enabling the surrounding areas, which share the pooled resource, to enjoy a water service at a reasonable price that is 8 to 12 times cheaper than if the pooled system did not exist.

CONCLUSION

Degrowth is neither inevitable nor a nightmare for cities. It is, above all, a process whose mechanisms must be identified so that it can be managed and embedded in strategies by local government as well as local economic actors. It can underpin a resilience strategy enabling cities to absorb slow-acting shocks.

A number of territories have succeeded in incrementally embedding the characteristics of this change in situation and altering their action frameworks and policy engineering. While media attention has often tended to focus on one example of such cities, Detroit – often presented as the capital of urban degrowth – it is important to bear in mind that this outsize city is also a fairly left-field example. Ordinary degrowth is to be found in small and medium-size towns and cities, further away from globalization circuits, where needs are more acute in terms of policy engineering and revitalizing a territory, and where budgetary restrictions place severe constraints on public action.

Within the new arrangements that arise in response to transitioning toward urban degrowth, whether involuntary, as is usually the case, or, more rarely, chosen, the primary challenge is always the same. It lies in understanding the extent to which strategies for adapting to degrowth allow, or will allow, a degree of territorial balance to be maintained and any aggravation of socio-spatial inequalities avoided, while also shifting people's perceptions about the potential of cities and the value of place.

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HOUSING AND INTEGRATING REFUGEES IN HAMBURG

By Anselm Sprandel,
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ARTICLE FOLLOWED BY AN INTERVIEW WITH GUILLAUME CAPELLE, CO-FOUNDER AND DIRECTOR OF SINGA

High-quality public housing project in Mittlerer Landweg, 2017
Both pictures ©ZKF

Anselm Sprandel studied economics in Heidelberg and Hamburg. In 1992, he joined the public service in Hamburg where he held various positions, among others as the head of the department responsible for child day-care centres at the Ministry of Labour, Social Affairs, Family and Integration. In October 2015, he was appointed head of the Central Coordination Unit for Refugees (ZKF) for the Free and Hanseatic City of Hamburg. The unit is responsible for housing and first integration measures for the tens of thousands of refugees that have come to Hamburg since 2015.

KEYWORDS

- REFUGEES
- MIGRATION
- HOUSING

In 2015, like many European cities, Hamburg faced a peak in refugee arrivals. Since January 2015, 71,000 refugees have arrived in Hamburg and 39,000 are still living in the city. Most refugees came from war-torn Syria, and from the troubled states of Afghanistan, Iraq, Iran and Eritrea. Since last year, Hamburg has also seen a rise in Turks fleeing their country and applying for political asylum in Germany.

At the peak of the crisis at the end of 2015, authorities in Hamburg focused on one objective: preventing homelessness without seriously impacting the life of Hamburg's 1.85 million citizens. As the pressure on housing rose, the municipality developed proactive methods based on legislation to house refugees in decent conditions and the Hamburg Senate created the Central Coordination Unit for Refugees (ZKF) to reduce bureaucracy and enable quick decisions and implementation. The city has shown great resilience in coping with the massive influx of refugees since 2015. Three main factors of success can be highlighted: (1) the particular socio-cultural background in Germany and Hamburg, (2) the governance mechanisms set up to deal with this unprecedented situation and (3) the involvement of civil society and participation of citizens.

INTRODUCTION

January 2015 started with about 1,500 refugees arriving in the city of Hamburg. Four months later, the number climbed to about 2,000. Then came the "wave" and numbers rocketed: In October, about 10,400 people found their way to the port city. Refugees were exhausted and in poor health after weeks of marching along stretches of the Balkan route which started in Greece. Many were traumatised by war experiences in countries like Iraq and Syria.

Some of them had seen friends and family members drown near them as crammed boats capsized while heading from the Turkish coast to Greek islands in the Aegean Sea, or from Libya to Italy.

In the Balkan region, authorities were overwhelmed by the situation; refugees at borders were simply waved to the north while governments all over the European Union were under rising pressure to stop illegal immigration. In early 2016, borders along the Balkan route were shut down.

In March 2016, the European Union and Turkey signed a deal under the terms of which Ankara agreed to stop asylum seekers from crossing by sea to Greek islands in return for €3 billion in aid to deal with millions of Syrian refugees living on Turkish soil.

Subsequently, the number of refugees reaching Hamburg fell dramatically. The situation is now more or less normal, with 713 refugees arriving in Germany in May 2018. A total of 413 were allowed to stay while the rest were distributed to other states in Germany. In line with the so-called "Königsberg quota", Hamburg receives 2.52% of all people applying for asylum in Germany. This distribution quota takes many factors of each of the 16 German states into consideration, such as demographics and economic strength.

1. FACTS AND FIGURES

Some 71,000 refugees came to Hamburg from January 2015 until May 2018 – in a city of about 1.85 million people. After registration, about 39,000 of them were assigned to stay in the city state; the others were sent to other states in Germany.

At the end of April 2018, 3,390 refugees were living in Hamburg's 12 initial shelters (*Erstaufnahme-Einrichtungen*) and 25,113 in 125 public housing sites (*Folge-Unterkünfte*). This is a total of 28,503 refugees living in publicly funded and operated facilities. In addition, some 10,000 refugees found a haven in Hamburg's normal housing market between January 2015 and April 2018.

2. THE THREE STEPS TO HOUSING REFUGEES

Refugees are first assigned to initial shelters, where they await a decision about their asylum application and where they benefit from the first integration measures such as language classes. All children and teenagers are sent to kindergartens or schools. In these shelters, social workers (65 refugees per social worker) and translators support the newcomers. Initial shelters have a canteen for all and shared bathrooms; many are made of Lego-like container units.

Usually, after a maximum of six months, refugees are moved from initial shelters to public housing units where families have their own flat, or six men share a three bedroom flat. Each apartment offers privacy with its own bathroom and kitchen. In public housing, the quota is 80 refugees per social worker.

Refugees at some point move from public housing units into the normal housing market, where they rent their own flat and need no more "intensive care" from social workers. Most adult refugees have by then learnt German, are visiting a university, are in some job training programme or are even already working and paying income taxes.

3. TACKLING THE HOUSING CRISIS

At the peak of the crisis at the end of 2015, authorities in Hamburg focused on one objective: preventing homelessness without seriously impacting the life of Hamburg's 1.85 million citizens. In the shortest time possible, dozens of new refugee housing sites for thousands of people were built, and kindergartens and school capacities expanded.

Housing facilities mushroomed all over the city as authorities rented or bought thousands of special containers, rented buildings or transformed halls of defunct firms into living facilities for refugees. The *Bundeswehr* (army) and the *Technisches Hilfwerk* (Technical Relief Aid), a national organisation, opened barracks, set up provisional tent sites and transformed empty halls into huge dormitories. The pressure was immense for weeks as no one knew when the refugee wave would ebb and stay down.

This crisis also hit Hamburg at a very unfavourable moment: the city was and is still suffering from a shortage of affordable housing because of an economic boom coupled with a high demand for urban flats. This situation became even more intense when tens of thousands of refugees poured into the city. The other German city states, Berlin and Bremen, faced similar hardships. Rural states like Bavaria or Saxony had far fewer problems finding and setting up housing facilities, and their housing markets offered much more affordable rental apartments than city states.

4. TACTICS AND GUIDELINES TO MASTER THE LOGISTICS OF HOUSING TENS OF THOUSANDS OF PEOPLE

A) Hamburg applied the legal possibility of section 246 of the National Building Code (*§ 246 Baugesetzbuch*), a special regulation that allows temporary refugee accommodation units to be built in industrial and other non-residential areas in times of crisis. Hamburg could therefore start immediately on the construction of the dwellings, even though the development plan for a specific area envisaged a different use.

"A HIGHLIGHT SINCE 2015 HAS BEEN THE CRUCIAL ROLE PLAYED BY CIVIL SOCIETY GROUPS AND VOLUNTEERS [...] MORE THAN 110 GROUPS AND INSTITUTIONS CAME TOGETHER IN THE "COALITION OF REFUGEE AID INITIATIVES IN HAMBURG."

"THE HAMBURG SENATE SET UP THE CENTRAL COORDINATION UNIT FOR REFUGEES (ZKF) TO REDUCE BUREAUCRACY, AND TO ENABLE QUICK DECISIONS AND IMPLEMENTATION."

B) Unlike the city state of Berlin, the city of Hamburg did not use sport halls of schools for refugee accommodation in order to avoid impacting school children. It bought or rented empty halls of Praktika and Max Bahr, two DIY (Do it Yourself) firms that had gone bankrupt before the refugee crisis. The City of Hamburg also bought and rented thousands of containers for housing refugees in Lego-like modular architecture.

C) Emphasis was put on the city's in-house expertise to avoid, whenever possible, involving the private sector. Two companies owned by the Free and Hanseatic City of Hamburg carried out numerous crucial tasks, from overseeing construction to operating sites:

- Sprinkenhof AG is the city's asset and project manager for the rental, leasing, construction and renovation of municipal real estate – including housing sites for refugees. It guarantees the professional planning, control and execution of projects in the sole interests of the city.
- fördern & wohnen (f & w) is Hamburg's second asset, responsible for operating almost all refugee housing sites. In order to relieve f & w, the city asked relief aid organisations to operate a small number of refugee housing sites – such as the German Red Cross, Malteser and Johanniter. The Hamburg authorities deliberately opted not to hire private firms to run such sites. Berlin did that and paid a high price, for example by having a number of ready-to-occupy shelters empty for months because firms were suing.

D) In the summer of 2016 a new central "Arrival Centre" opened its doors in the Rahlstedt neighbourhood, where every refugee entering Hamburg has to register. In this facility with the capacity of processing 400 people per day, refugees first undergo a medical check. They then register and write as well as submit their asylum application to the Federal Office for Migration and Refugees (BAMF), which has a team at the Arrival Centre. After staying there for a few days at a housing section, refugees move to initial shelters or are distributed to other German states, in line with the above mentioned distribution quota.

E) The Hamburg senate, or government, set off a housing boom by approving in 2017 the construction of 13,411 apartments. The year before, the number was 12,471. It was 9,560 in 2015. Authorities expect the city's housing shortage to start easing by end 2019.

F) In cooperation with the HafenCity University in Hamburg, in 2016 the authorities organised "Finding Places", a three-month participation project for citizens from the city's seven districts. In workshops, they used an interactive technology, a so-called "city scope" co-developed with the MIT in the USA, to suggest areas for housing refugees. As a result, three areas for 624 refugees were realised and five areas for 688 refugees were kept in reserve.

5. "WILLKOMMENSKULTUR" (WELCOMING CULTURE) AND THE ROLE OF CIVIL SOCIETY

A highlight since 2015 has been the crucial role played by civil society groups and thousands of volunteers from all walks of life. They were right from the beginning on the ground, helping with managing and distributing food and clothing donations. They comforted refugees with traumatic experiences during warfare in their home countries and while fleeing to Europe. Volunteers later accompanied refugees visiting government institutions, helped them learn German and gave valuable advice when searching for a flat in the normal housing market.

More than 110 groups and institutions came together in the "Coalition of Refugee Aid Initiatives in Hamburg" (BHFI) to help refugees integrate society. Churches and mosques opened their doors and, at the peak of the crisis, even provided sleeping facilities for refugees for a few days until authorities could transfer them to professionally-operated sites. Foundations like the Lawaetz Stiftung, Körber Stiftung and Bürger Stiftung funded integration and support activities with refugees. Indeed, the response to the crisis was society-wide, and officials are grateful for the massive support that was "Willkommenskultur" at its best.

Authorities meet regularly with BHFI representatives to solve problems, sometimes even to find solutions for individuals. The BHFI argued for setting up the office of an ombudsperson, where refugees and volunteers can voice their grievances. In July 2017, Mrs Annegrethe Stoltenberg took the position of an independent ombudswoman, supported by two staff. Her neutral institution is fully independent and treats complaints about the accommodation and integration of refugees with absolute discretion.

There is a historic trauma behind the ongoing large-scale work of volunteers to support refugees: the state of Germany in May 1945 after the defeat of the Nazi regime and the subsequent massive population shifts in post-World War II Europe. Some 10 million Germans alone fled to West Germany – from eastern German territories like Prussia that became Polish and Russian, and from countries where Germans were in a minority such as Czechoslovakia and Romania.

For years, millions of Germans lived in dramatic conditions in farm barns, bombed-out houses, cellars and the infamous "Nissen barracks" that were designed by Canadian engineer Peter Nissen for the military during World War I. Almost every German family today can recount stories of grandparents who had to run for their lives in 1945.

6. CITIZEN PARTICIPATION AND CONSENSUS-BUILDING

When many refugees were arriving in Hamburg every day at the end of 2015, authorities set up a number of huge facilities to house them. At one site, the Schnackenburgallee initial shelter, more than 2,000 refugees were living there for a while. Dozens of other facilities harboured between 500 and 1,500 refugees.

During the height of the crisis, citizen participation was minimal because there was simply no time to organise lengthy participation processes. Authorities just managed to invite citizens in neighbourhoods to inform them that in a few days hundreds of refugees would be their neighbours. Most people were welcoming, but some voiced concerns related to security and to the ability of their community to absorb and integrate so many newcomers.

Authorities during that period also started a programme of building high-quality public housing in different locations, one for up to 2,500 refugees. These plans and the lack of time for lengthy citizen participation processes led to the forming of a coalition of 14 local neighbourhood initiatives under the umbrella of the newly-formed "Hamburg für Gute Integration", or "Hamburg for better Integration" (HGI).

HGI mobilised tens of thousands of citizens, who signed petitions against large housing projects for refugees. They argued that this would lead to ghettos, preventing proper integration of refugees. Then they went a step further and launched a campaign to have a referendum on these housing projects. The Hamburg constitution allowed for such a democratic move.

The Hamburg ruling coalition of Social Democrats and Greens immediately started negotiations with HGI and signed in July 2016 a deal to prevent the planned referendum. Officials did not want an emotional campaign that could degenerate into an ugly debate for and against refugees.

The main points of the deal with HGI, known as the *Bürgerverträge* (Citizen Agreements), are:

- In some of the high-quality public housing projects, the number of refugees will be reduced to a maximum of 300 refugees per project by the end of 2019.
- Every new public housing site is built for a maximum of 300 refugees.
- A maximum of 300 housing sites for refugees are spread all over Hamburg.

This deal would become obsolete if Hamburg was to face another massive influx of refugees. But this so called "3 times 300 formula" is being implemented. Authorities in Hamburg's seven districts and state authorities like the Central Coordination Unit for Refugees (ZKF) regularly meet HGI representatives and monitor the implementation of the deal.

In 2017, ZKF and HGI went a step further and agreed on a system to distribute refugees as fairly as possible among the city's seven districts, known as the "orientation and distribution key for refugee accommodation". Currently, refugee housing density is higher in medium and low income neighbourhoods, but authorities are now constructing more public housing in medium and high income areas.

Despite the deal with HGI, a number of neighbours adjacent to planned refugee housing sites filed in 2015-2016 lawsuits to prevent their construction. The city of Hamburg did not lose any lawsuit, but these legal battles delayed the construction of many housing projects for numerous months.

7. PREPARING FOR THE NEXT WAVE

The city of Hamburg expects that, in 2018, about 3,600 additional refugees will need to be housed in publically funded sites in Hamburg. Refugees would be allowed to bring in about 1,500 close family members from abroad – in line with a government-sponsored family reunification programme.

In addition, the ZKF will have, by the end of 2018, 2,500 beds in reserve. The reason is that the refugee deal with Turkey is shaky, and the political situation in many countries in the Middle East and North Africa is tense. Add to it the migration pressure from sub-Saharan Africa northwards.

Since mid-2018, the housing situation of refugees has started to ease as more and more were transferred from crowded initial shelters to public housing sites. The focus of authorities has shifted from providing quality housing to integration measures.

8. THE CHALLENGE: INTEGRATING TENS OF THOUSANDS OF REFUGEES

Hamburg's Ministry of Labour, Social Affairs, Family and Integration in September 2017 published the city's updated "Integration Concept". It is the product of a long process involving many official players like the ZKF and representatives of the seven districts as well as civil society groups and independent experts.

The concept relies on the fact that successful integration is only possible when all key actors interact in the field: refugees, migrant organisations, civil society groups and volunteers as well as public institutions on local, regional and national levels. Note that 33% of Hamburg citizens have a migration background. And about 50% of the under-18s have a migration background.

The concept has two strategic lines:

1- **The intercultural opening of all state institutions**, meaning the reduction of structural discrimination in all walks of life. This would enable everyone to participate equally in central areas of society. Integration is therefore seen

as an opportunity-oriented and measurable participation of people with a migration background in central areas of social life. The intercultural opening of Hamburg's public sector started in 2006 with a campaign called "We are Hamburg! Are you with us?" Staff since then have undergone intercultural training.
The quota of trainees with migration backgrounds in the public sector went up from 5.2% in 2006 to 18.1% in 2015. And the number of employees with migration backgrounds shot up from 8.9% in 2008 to 13% in 2016. The city is therefore moving steadily in the right direction to show that the public sector increasingly reflects society's cultural diversity.

2- **Refugees and migrants have to show willingness to integrate.** The highest priority is to learn German as fast as possible. They need to accept Germany's legal and social order, which is written in the constitution. Non-negotiable are key points like the rule of law, state neutrality in religious affairs, gender equality and child rights. In addition, refugees are expected to enter schools or training programmes so that, at some point, they can stand on their own two feet economically.

Hamburg's integration concept not only lists all kinds of educational and training measures, it also includes **target indicators**. Here are three examples:

1- Language	2014	2015	2016	Goal 2018
Percentage of people with migration background who pass the B1 language test	56.9%	60.5%	58.5%	> 60%

2- High School	2014	2015	2016	Goal 2018
Percentage of high school graduates with a migration background	39.7%	41.1%	45.8%	46%

Comparison: 59.5 % of German nationals with no migration background got a high school degree in 2016.

3- Work	2014	2015	2016	Goal 2018
Employment rate of people with a migrant background	64.7%	65.1%	63.0%	> 65%

"IN 2015, ABOUT 890,000 REFUGEES CAME TO GERMANY; IN 2016 THE NUMBER DROPPED TO ABOUT 280,000; IN 2017 IT WAS ABOUT 187,000. THEREFORE, A TOTAL OF 1.357 MILLION REFUGEES ARRIVED IN 2015-2017."

9. CONCLUSION: RESILIENT HAMBURG

The city has shown great resilience in coping with the massive influx of refugees since 2015. The main reasons are the following:

SOCIO-CULTURAL BACKGROUND IN GERMANY AND HAMBURG

- *Germany has become a multi-cultural, tolerant and open society.*
- *The country learnt from the past migration waves. Germany from the mid-1950s till early 1970s attracted about 2.6 million migrants from Turkey, Greece, Italy, Spain and Portugal. In the early 1990s, about a million people from war-torn Yugoslavia, from Romania and from Turkey applied for asylum.*
  After the fall of the Berlin Wall in 1989 and the subsequent collapse of all communist regimes in Eastern Europe, 600,000 East Germans moved to western Germany – together with hundreds of thousands of people with German roots from Eastern Europe.

GOVERNANCE

- *Good governance is the rule in Hamburg. The city's main administrative and political leaders meet twice a month and take consensual decisions. They ensure that important projects cannot be challenged by environmental protection, by not-in-my-backyard attitudes or by local economic interests. Good governance also means transparency and public information, evaluation of our work and accountability.*
- *The Hamburg Senate set up the Central Coordination Unit for Refugees (ZKF) to reduce bureaucracy, and to enable quick decisions and implementation. Previously, competencies were split between the Ministry of the Interior and the Ministry of Labour, Social Affairs, Family and Integration.*
  The unit focuses, among other things, on forecasting planning and city-wide coordination of refugee accommodation needs. It supports first integration measures such as childcare and kindergartens and helps guide refugees towards education, training and jobs. It is also involved in citizen participation processes and in mediation and conflict resolution measures.
- *The economic boom: Hamburg has been funding the housing and integration of refugees from budget surplus – and not with loans or budget cuts impacting citizens negatively.*

CITIZEN PARTICIPATION

- *As mentioned above, civil society groups and tens of thousands of volunteers helped authorities cope with the high number of refugees.*
- *Authorities started in 2015 with ad hoc events focusing on just informing neighbours about new refugee housing sites. In 2016, citizen participation became more refined, culminating in a lengthy process that involved seven workshops in Hamburg's seven districts, where citizens commented on Hamburg's integration policies.*

Members from civil society, migrant organisations, faith representatives and experts gave valuable input that found its way into the city's updated integration concept, published by the Ministry of Labour, Social Affairs, Family and Integration in September 2017.

In the meantime, almost every fourth refugee who has come to Germany since 2015 now has a job. If employment growth continues in this way, half of them will have a job after five years, according to a study by the Institute for Labour Market and Job Research (IAB). By the end of 2018, between 8,500 and 10,000 more refugees in Germany would then find a job every month.

In 2015, about 890,000 refugees came to Germany; in 2016 the number dropped to about 280,000; in 2017 it was about 187,000. Therefore, a total of 1.357 million refugees arrived in 2015-2017.

Integration measures are going ahead at full speed and bearing their first tangible results. But there are still important challenges ahead in integrating all newcomers in society and in daily life, and in enabling refugees to move as soon as possible from an initial shelter or public housing into normal, private dwellings. German authorities are aware that housing is a key part of the integration process because it provides stability in a private space.

With the help of civil society and volunteers, the city of Hamburg is, in parallel, promoting daily interaction between refugees and residents. This helps to practice German language skills, to understand the values of a democratic and open society where the rule of law prevails, and it promotes sharing cultural experiences. Here again, volunteers play an invaluable role in making refugees feel that Germany is their new home, and where their loved ones have a safe and promising future.

Citizen participation on Hamburg's integration concept, district of Nord, January 2017, ©ZKF

MORE INFORMATION

- Central Coordination Unit for Refugees (Zentraler Koordinierungsstab Flüchtlinge, ZKF), Free and Hanseatic City of Hamburg, http://www.hamburg.de/zkf-about-us/; www.facebook.com/ZKF.Hamburg and www.twitter.com/ZKFHamburg
- Office for Work and Integration (Amt Arbeit und Integration) at the Ministry of Labor, Social Affairs, Family and Integration, http://www.hamburg.de/basfi/organisation/1593392/amt-ai/
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- Initiatives for Better Integration (Initiativen für Gute Integration, IFI), https://www.ifi-hamburg.de/
- Institute for Labour Market and Job Research (Institut für Arbeitsmarkt- und Berufsforschung, IAB), http://iab.de/

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Three questions to Guillaume Capelle, co-founder and director of the NGO Singa

Guillaume Capelle is an international relations graduate who founded SINGA in 2012 with Alice Barbe and Nathanaël Molle. SINGA is a nonprofit organization with branches in several cities in France and abroad that seeks to create links between refugees and host communities, creating and sharing tools available to everyone. Guillaume Capelle is currently its international director.

SINGA is a nonprofit founded in 2012 to foster refugees' integration in France by involving citizens of host communities. Can you tell us a little about the project's origins and aims?

Guillaume Capelle: The idea behind it dates back to a previous working experience that I had in Australia while finishing my Master in International Relations in 2010. I spent several months working for Amnesty International as part of a 30-strong group of legal counsellors working with asylum seekers. At the time, I was struck both by the grueling journeys these people had undertaken and by the distant, not to say the violent, treatment they were sometimes subjected to by state institutions and civil society. When you actually meet refugees, you realize what a great source of inspiration they can be for our wider societies. However, wherever they go, we are always quick to label them "refugees."

SINGA is the fruit of this observation and our mission is to liberate their potential.

The first step was to create spaces where people could simply meet up with each other and be themselves, without being labelled as French or refugee. We simply started by organizing events such as picnics, soccer matches, and so on. As a result of these encounters, a community emerged from people who would meet up, without necessarily telling their stories or the reasons why they left, but who simply chatted and spent time together. Following on from these first encounters, we began working to build deeper ties and construct tools to help: if somebody wanted to learn French, we would put them in touch with a person who could teach them; if somebody else looked for an accounting job, we would introduce them to someone in that field, and so on. SINGA works as an involvement mechanism for citizens who want to act but do not know what to do. Our idea is to suggest that they continue doing what they enjoy, but in the company of new people: going to a museum or a concert, playing sports, cooking, etc.

Starting from otherness, we have succeeded in creating a social network that brings people together around things we all share. Our will is to promote a collaborative dynamic, working "with" not "for."

The collaborative mindset is extremely powerful, it is revolutionizing approaches and solutions to many problems. For example, we have found a workaround for issues related to refugees' accommodation and housing. Today in France there are roughly 2,400 emergency beds for 80,000 people. It is therefore extremely difficult to find emergency accommodation. Nevertheless, thousands of people own vacant properties or have spare rooms in their homes. We have tried to connect these people with refugees by creating a network called CALM (Comme À La Maison, or "just like home"). Since then, 61% of people who had been hosted through CALM have moved on to private rented accommodation and 44% have found a job.

We are now trying to take this idea of collaborative citizen mobilization to the next level. For instance, SINGA has set up an incubator for innovative projects that look at our society in new ways. Projects can come both from refugees or citizens, the idea being to develop new initiatives between the two.

In your experience, how does integrating refugees into host communities help to build models for a more resilient city?

G.C.: People who manage to overcome the institutional, cultural and interpersonal barriers they face are resilient individuals that we can learn from. Some refugees lived through experiences of extreme violence. The fact is that for years the most resilient people have been settling among us. Integrating them better and building ties between refugees and host communities can help us to look afresh at how we operate and improve our own capacity to demonstrate resilience.

At SINGA, this philosophy is grounded in three concepts that are inspired by science:

1) Homeostasis: in biology this is the phenomenon by which systems self-regulate in contact with external elements. For example, when a drop of water falls on a sheet of paper, the paper absorbs the water, it is not destroyed. Homeostasis is a fascinating biological mechanism that we can use as an inspiration to improve the ways that we welcome refugees.

2) Serendipity: making a discovery by chance, or maybe even by mistake. It was serendipity that led Irène and Frédéric Joliot-Curie to discover artificial radioactivity. A crisis, war or natural disaster will drive people away from their homelands, ending up perhaps in Paris, Montpellier or Lille, and this can have unexpected effects that may turn out to be quite extraordinary.

3) Stigmergy: ants leave olfactory cues behind them when they move, so that other ants can follow them more easily. In the same way, SINGA wants to make its methodology open to anyone, this means that motivated citizens eager to get involved would have access to it.

SINGA has grown rapidly in recent years in France and abroad. What are the main challenges facing organizations such as yours that rely primarily on citizen mobilization and community spirit?

G.C.: In six years of existence we have established a presence in seven countries and 12 French cities, and the network is setting up in a further 10 cities. SINGA was originally focused on issues surrounding asylum seekers; today its influence has grown far wider.

As a nonprofit regulated by a French law dating back to 1901, it is hard for us to raise funds. Funding and subsidies are all very target-led, very specific, whereas the richness of SINGA is its focus on people. We pay very little, which is a problem because our teams deliver outstanding work. The next challenge SINGA has to address is moving toward an economic model that will truly harness the potential of our staff.

Rather than going head-to-head with other nonprofits in an endless battle for subsidies, SINGA believes in cooperation. We think that our encounters create value, new products and services, and make us able to imagine another economic paradigm.

"THE MOST RESILIENT HAVE BEEN SETTLING AMONG US FOR YEARS. HELPING THEM TO INTEGRATE AND BUILDING TIES BETWEEN REFUGEES AND HOST COMMUNITIES CAN HELP US TO LOOK AFRESH AT HOW WE OPERATE AND IMPROVE OUR OWN CAPACITY TO DEMONSTRATE RESILIENCE."

2. TYPOLOGY OF ACTIONS TO IMPROVE CITIES' RESILIENCE

The second section looks at actions cities can take to increase their resilience in the face of shocks and stresses. It seeks to identify best practices and innovative strategies in resilience, with a focus on four areas: cities that are greener and more liveable, partnerships, new approaches to urban planning, and accustoming residents to risk.

1. Greener and more liveable cities

In an attempt to increase their resilience, cities are increasingly committing to paying more attention to environmental and ecological considerations. A growing number of measures to cut CO_2 emissions are being taken, including city toll payments and reduction in the use of private cars, focus on public transportation and cycling, and expanding green spaces in cities. The city of Copenhagen, Denmark, has changed radically since the 1980s, from a city in decline to a city often ranked as one of the world's best places to live. As Copenhagen's Lord Mayor underlines in this issue, the aim is for his city to "maintain and develop its position as a green and liveable city," so that it stays attractive and consolidates its resilience.

2. Partnerships

Resilience is a multi-dimensional concept that impacts a broad range of fields. It is hard for territorial actors, and this includes economic actors, to act alone to boost the resilience of a territory. Partnerships are the key. The first public-private partnership was brokered by The Rockefeller Foundation in 2016 and signed by Veolia, Swiss Re and the City of New Orleans, following the lessons of Katrina. Laurent Auguste, a member of Veolia's executive committee, and Ivo Menzinger, from reinsurance specialist Swiss Re, talk about the goals of a partnership that aims to reduce exposure to risk of the city's water infrastructure and facilitate faster post-disaster recovery. The heart of this partnership lies in the complementarity between these two actors: Veolia is an expert manager of resources and infrastructure, and reinsurance specialist Swiss Re has been able to share its expertise in risk modeling.

3. New approaches to urban planning

The concept of the resilient city has seen the emergence of new ways of imagining and developing urban space. Whereas urban flows were long viewed as congruent with other "big flows," as embodiments of technical progress and constant growth, the rise of degrowth calls this dominant ideology into question. This is what architect and academic Hidetoshi Ohno does by developing urban projects in Japan based on "small flows," emphasizing small-scale city projects focused on delivering local solutions.

4. Accustoming people to risk

A city cannot be resilient without its residents becoming resilient too. Accustoming people to risk is an extremely important lever for creating the conditions for resilience and making risk prevention and management second nature. All too often, risk factors are grounds for anxiety, making it difficult to communicate with residents about the issues they may one day face. Grassroots initiatives like Hackers Against Natural Disasters, a French network co-founded by Gaël Musquet, have set out to use large-scale disaster simulation exercises to help teach people how to react if natural disaster does strike.

Mathilde Martin-Moreau,
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Coordinators

COPENHAGEN: RESILIENCE AND LIVEABILITY

This article has been written with the support of the City of Copenhagen

Christianshavn and bicycles
©Ursula Bach

KEYWORDS

- LIVEABLE CITY
- INCLUSIVE CITY
- INTEGRATED URBAN PLANNING

In the past 30 years, Copenhagen has undergone a great transformation. From an ageing, indebted city with fleeing industries and inhabitants, it has become one of the happiest cities in the world according to different city rankings. Copenhagen has based its resilience on a dynamic economy and a green and inclusive urban environment for its inhabitants. This has materialized through a comprehensive urban development strategy. The city has launched the revitalization of several declining neighborhoods over the course of decades with the objective of building a liveable city with ambitious economic, social and environmental objectives and that offers every citizen a homogenous urban and social fabric. The aim of Copenhagen is to make the city liveable, so all aspects of citizens' lives are taken into consideration in an inclusive strategy of urban planning, making cities and inhabitants more resilient to shock and stresses.

INTRODUCTION

The city of Copenhagen has undergone a massive transformation in the past 30 years, going from a declining city to one that is often depicted as one of the happiest, most prosperous cities in Europe. Thanks to an innovative and ambitious revitalization scheme, the city has managed to reverse the dangerous trend where declining fiscal resources and high social and infrastructure maintenance expenditure can lead cities to bankruptcy. The city has launched the revitalization of several declining neighborhoods with the objective of building a liveable city: one with ambitious economic, social and environmental objectives and that offers every citizen a homogenous urban and social fabric. The liveable city as conceived in Copenhagen is aligned with what is generally meant by resilience. Indeed, communities in such an environment tend to have the inner strength to resist future stresses or shock, which is at the core of resilience.

1. COPENHAGEN'S TRANSFORMATION SINCE THE 1980S

In the 1980s, the city of Copenhagen was suffering from the decline of its port and its industries. Unemployment reached 17.5% in the city and its annual deficit hit $750 million. The city was stuck in a vicious circle of deindustrialization, unemployment, high welfare costs, suburbanization, an outdated housing market and strong segregation.

Yet, today Copenhagen and Denmark as a whole have a remarkably low unemployment rate – 4.4% at the end of 2017. The financial and economic crisis starting in 2008 had a relatively low impact on the city compared to other European cities and it recovered quite quickly. In 2008 and 2009, GDP shrank by respectively 1.8% and 1.1% and started growing again in 2010.

Copenhagen's attractiveness is witnessed by the fact that its population is growing again. Compared to the late 1980s, there are 40% fewer old people and 40% more young people, and there are also 20,500 more families with children now than in the years 2000. The city is even attractive to foreigners as there are today 37,000 more international residents than 10 years ago.

Copenhagen has become one of the "best cities" to live in according to international rankings. It is often on the top of lists of most liveable city, whether it is the UN's happiness index or the most liveable city ranking by the magazine Monocle. This is generally explained by its scale, its architecture, green public spaces, and its efficient transportation system and bicycles. But the key to the city's transformation is a comprehensive urban strategy that mixes economic dynamic, social inclusion and environmental concerns coming together in the concept of "liveable city".

2. LIVEABILITY AT THE HEART OF THE CITY'S URBAN PLANNING

The aim of Copenhagen is to make the city liveable, so all aspects of citizens' lives are taken into consideration in an inclusive strategy of urban planning. That includes jobs and affordable houses but also a green environment and citizens' health and lifestyles.

Copenhaguen city life - ©Kontraframe

"COPENHAGEN IS CONTINUOUSLY RATED AMONG THE MOST LIVEABLE AND GREENEST CITIES IN THE WORLD. TODAY OUR HARBOR IS SO CLEAN WE CAN SWIM IN THE WATER AND MORE THAN 62% OF COPENHAGENERS RIDE THEIR BIKE TO WORK OR SCHOOL EVERY DAY."

Frank Jensen, Lord Mayor of Copenhagen

2.1. GREEN INFRASTRUCTURE AND CLIMATE STRATEGY

Climate change in Denmark is predicted to increase rainfall to such an extent that current infrastructure would be unable to cope. Flooding could become common place, and predictably extremely costly. In 2011, a particularly heavy rainfall caused over $1 billion in damage and "100 years" rainfalls have happened twice in the past five years.

Therefore, climate adaptation is an important pillar of the climate strategy of Copenhagen. The city pilots the redevelopment projects occurring in the city, and therefore has the capacity to impose green, forward-looking infrastructure. One of the most striking examples of this is the integration in neighborhoods of green spaces that can retain water when rainfalls cause risks of flooding. In the neighborhood of Osterbro, a park was opened in 2015 that fights soil waterproofing and heat islands. When rainfalls are too heavy, the water is retained in parts of the park and then slowly redirected to the city's water system and is also used in the summer to water the plants of the garden.

Mitigation is also an important side of the climate strategy of Copenhagen. The city plans to be the first carbon neutral city by 2025 and has dedicated $472 million through to 2025. And if the private sector is included, $4.8 billion will be invested. To reach this target, the construction, transportation, waste management and energy sectors are concerned. The city has already made significant progress, reducing CO_2 emissions by 21% from 2005 to 2011.

Energy is one of the main areas of work to make the city carbon neutral and in particular electricity generation and heating systems. Three quarters of the efforts planned to reach carbon neutrality by 2025 will target these two domains. Regarding energy generation, the objective is to move away from coal to wind turbines and biomass. Wind turbines supply one third of the country's electricity and the city plans to add above

100 turbines. As for heating, 98% of households are connected to the district heating system that uses waste heat from power plants to warm houses. For the transportation sector, fostering cycling is a major element of the climate neutrality plan but public transportation is also involved. By 2025, 75% of all trips should be made by bike, foot or public transit and all buses will be replaced by electric buses. Lastly, private cars are targeted and already 85% of the city's cars run on electricity and hydrogen.

2.2. FOSTERING SOCIAL BONDS AND HEALTHY BEHAVIORS

In Copenhagen, the meaning of liveable cities goes beyond affordable housing, clean air, jobs and transportation infrastructure. It also means creating physical spaces in the city where people can meet, gather, play, and engage as active citizens. This has the purpose of building and maintaining the social fabric that is so fundamental to resilient societies. And even more so in cities, where social bonds tend to fade away. One example of this approach is the Superkilen park in Norrebro. The park is divided into three zones dedicated to sports, games or outdoor activities and is a symbol of the "living together" approach. Another example is the swimming possibilities in the harbor of Copenhagen, which are the result of the climate prevention infrastructure that has been put in place. Today, both Copenhageners and tourists enjoy the opportunity to swim in the city's harbor. Last summer (2017), the Harbor Baths received over 150,000 visitors.

Health is also a key determinant in any happiness index and a strong emphasis of the city of Copenhagen. The intervention of the city on health is twofold. Denmark has (1) a notoriously generous social welfare system with preventive actions and (2) the city of Copenhagen encourages healthier choices by making them the most desirable ones. Regarding preventive actions, Copenhagen

Green building - ©Kontraframe

made the headlines by launching clinics to treat stress, anxiety and depression in 2014, spending around €800,000. On encouraging healthy behaviors, one of the most visible side of this policy is cycling. In Copenhagen, above 40% of all commutes are made by bike. This is unheard of in most other European capitals. People do it not because it is the healthy choice but because it is the easiest and most convenient choice. This is the result of an urban transportation policy that systematically prioritizes bikes over cars. DKK 2.7 billion (€362 million) were invested on cycling and 375 km of cycle paths were built. Beyond bike lanes, traffic lights are programmed according to bike speed rather than car speed, bike lanes are cleared before roads when there are snowfalls etc.

3. CHALLENGES AHEAD

Even if Copenhagen has managed to turn around a declining situation into a thriving city, there are challenges arising as the city grows. The two main challenges are the housing market and the growing social needs of its population.

The first challenge is the housing market. As the city grows and attracts inhabitants, the housing market is under pressure and property prices are rising. In 2013, Copenhagen was one of the European cities where prices rose the quickest. And property prices have increased fourfold since 1993. The city needs 45,000 new homes by 2027 and many buildings need to be renovated, both of which will require significant investments. The city will need to spend around DKK 500 million (€67 million) to renovate buildings to meet the maintenance deficit.

In this context of rapidly rising property prices, making sure housing is affordable for the entire population becomes challenging. Many growing cities experience gentrification and exclusion of poorer populations to the outskirts of the city. Already some neighborhoods are concentrating vulnerabilities; for example, if Norrebro was a separate municipality, it would be Denmark's poorest. If this were to become generalized, it would throw some populations into a circle of vulnerability accumulation. To avoid this, the city intends

"I WANT COPENHAGEN TO MAINTAIN AND FURTHER DEVELOP THIS POSITION AS A GREEN AND LIVEABLE CITY. OVER THE LAST DECADE, WE HAVE INVESTED MORE THAN €100 MILLION IN BETTER BICYCLE INFRASTRUCTURE. WE HAVE MORE THAN 435 KM OF BIKE LANES, BRIDGES AND HIGHWAYS MADE ESPECIALLY FOR BICYCLES."

Frank Jensen, Lord Mayor of Copenhagen

DEVELOPMENT AND RENOVATION OF COPENHAGEN'S DISTRICTS

The North Harbor district is Copenhagen's future sustainable district and should be completed in 2050. It is Copenhagen's flagship project for renewable energy and optimal resource use. It should be home to 35,000 Copenhageners and host 35,000 jobs. U.N. buildings will be located in this new neighborhood. In a space-constrained city, the North Harbor district is built on surplus soil excavated during the metro construction. The district will be a city within the city, hosting commercial, residential and office space and state-of-the-art transportation and energy efficient buildings. A few other districts like Gronttorvet, Orestad and Carlsberg are being renovated to become residential and commercial areas with public spaces at their heart, whether sport or cultural infrastructure, education centers or large green areas.

"IN COPENHAGEN WE BELIEVE THAT CITIZENS HAVE A RIGHT TO CLEAN AIR AND WE CONTINUOUSLY TRY TO IMPROVE AIR QUALITY. WE ARE REPLACING ALL BUSES WITH ELECTRIC BUSES BY 2025 AND SOON WE WILL OPEN NEW METRO LINES. FURTHERMORE, WE ARE WORKING TOWARD MAKING NEW ENVIRONMENTAL MEASURES FOR ALL TYPES OF DIESEL VEHICLES."

Frank Jensen, Lord Mayor of Copenhagen

to build 25% of social housing in all revitalized neighborhoods. Currently, central Copenhagen is underprovided in social housing compared to the suburbs of the city, but 8,200 social housing units were built between 2011-2015 and 9,000 new units will be built between 2015-2027.

As the population grows, so do social needs. Overall, newcomers to Copenhagen are less wealthy than the current population and even more so when compared to the Copenhageners that move out of the city (the difference is around DKK 70,000 - €9,300 - in annual income). On the other hand, the social needs of the growing population are increasing as there are more families with children, more students and more elderly people. Those populations have high social needs but the fiscal basis to fund that social expenditure is not increasing.

To meet those challenges, Copenhagen has, like many other cities, based its model on strong growth to increase fiscal revenues. The city has advertised an ambitious growth policy, the "Business and Growth Policy". The objective is to reach 5% of annual growth by 2020. This strategy relies on being attractive nationally and more importantly internationally to create 20,000 new jobs and attract investments and skilled professionals. It is competing with other cities like Stockholm and Hamburg to attract workers and international companies. The city is grounding its attractiveness on growth and quality of life going hand in hand. It is also working on reaching critical size through the greater Copenhagen metropolitan region. Greater Copenhagen is a platform for regional collaboration and economic growth that spans 79 municipalities in Denmark and Sweden and is home to 4 million people.

Harbour baths swimming - ©POLFOTO

CONCLUSION

Copenhagen has based its resilience on a dynamic economy and a green and inclusive urban environment for its inhabitants. The two building blocks of this strategy are green "future-proof" infrastructure and an inclusive social fabric. This has materialized through comprehensive urban planning. Renovated and newly built neighborhoods are thought through to reach economic, social and environmental objectives. This means that urban areas mix shops, working spaces, housing and green areas, which reduces the exposure of each neighborhood and its inhabitants to localized shocks.

A COMPREHENSIVE STRATEGY OF RESILIENCE:
Veolia and Swiss Re partnership in New Orleans

By Laurent Auguste,
Senior EVP Development, Innovation & Markets, Veolia

ARTICLE FOLLOWED BY AN INTERVIEW WITH
IVO MENZINGER FROM SWISS RE

New Orleans - ©Veolia / Christophe Majani d'Inguimbert

Laurent Auguste joined Veolia in 1995 after a first professional experience as a consultant in Japan. Initially appointed to Shanghai in 1999, he was promoted to lead Veolia's water business in South Korea then, in 2002, to lead it in Japan; he was appointed Head of Water Business for the Americas in 2008. Since 2013, Laurent Auguste has been Senior Executive Vice President, Development, Innovation & Markets, and a member of the Executive Committee.

KEYWORDS

- PARTNERSHIP
- VULNERABILITY AND RISK ASSESSMENT
- WATER INFRASTRUCTURE
- PERFORMANCE
- REINSURANCE

In 2016, Veolia, Swiss Re and the city of New Orleans signed the first public-private partnership designed to roll out a strategy for urban resilience, in a deal brokered by the Rockefeller Foundation's 100 Resilient Cities network. Operating in the post-Katrina world, this collaboration has a twofold objective: (1) reducing the exposure to risk of the city's water infrastructure and (2) facilitating post-disaster infrastructure recovery to limit the economic impacts. After presenting the methodology used in this partnership, the article examines the benefits to stakeholders of a resilience-based approach and sets out key factors and challenges to overcome in order to look at resilience not only in terms of risks but also as an opportunity.

INTRODUCTION

On August 29, 2005, Hurricane Katrina struck New Orleans in an unprecedented disaster. Located in southern Louisiana, New Orleans lies on the Mississippi River delta close to the Gulf of Mexico. Bounded by marshy areas known as bayous, close to half its total surface area is covered by water and a large portion of its territory sits below sea level.

Katrina led to the collapse of one of the levees, which are supposed to protect the city from chronic flooding during the hurricane season. Some 80% of the city was quickly flooded. Despite the announcement of a compulsory evacuation leading to the departure of 1 million people, around 1,800 died. New Orleans was devastated and the damage caused was estimated at $150 billion.

Mitch Landrieu, a former Mayor of New Orleans, would explain several years later: "We understood that we had to prepare for this type of event and we decided to reorganize. We wanted to reinvent the way we built the city, the way in which we prepare our responses to shocks, the manner in which we build social cohesion. It's not just about infrastructure but also the strength of the inhabitants." In particular, Mayor Landrieu decided to join The Rockefeller Foundation's 100 Resilient Cities network in 2014. In 2015, New Orleans became the first city to publish its resilience strategy, Resilient New Orleans.

It was against this backdrop that New Orleans signed with Veolia, which had been working with the city for over 20 years, and the Swiss Re reinsurance company, the first international public-private partnership designed to implement an urban resilience strategy. The partnership has a twofold objective: (1) reducing the exposure to risk of the city's water infrastructure and (2) facilitating post-disaster infrastructure recovery to limit the economic impacts.

The partnership will contribute to the city's resilience. Judith Rodin, a former president of The Rockefeller Foundation, explained: "New Orleans is becoming a model of resilience for 21st-century cities. By strengthening their resilience, cities prepare to face up to new catastrophes while building a stronger economy and society."

1. THE FIRST INTERNATIONAL PUBLIC-PRIVATE PARTNERSHIP TO ENSURE NEW ORLEANS' RESILIENCE

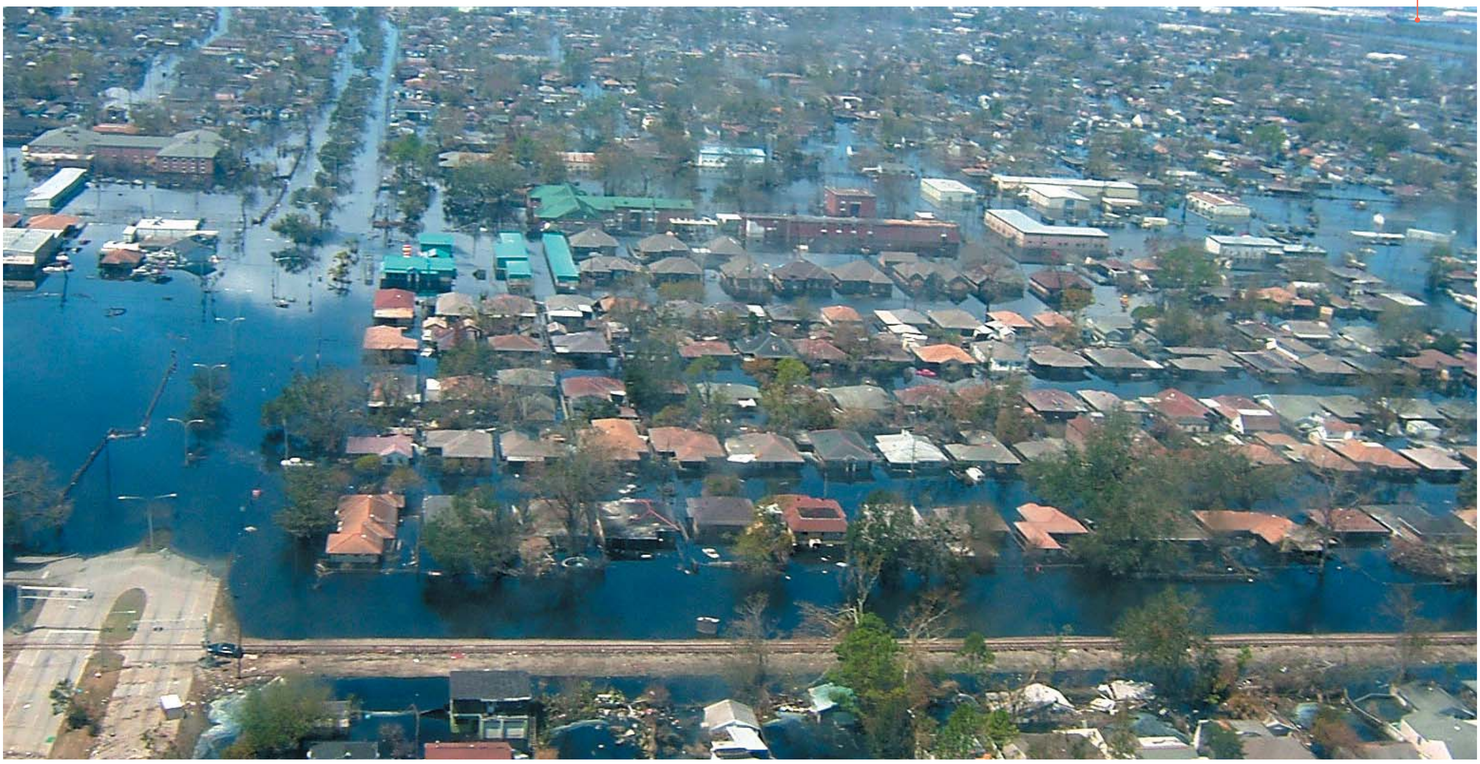
Veolia has been working in New Orleans for more than 20 years. One of its wastewater treatment plants was located in District 9, which was one of the districts flooded during Katrina. Veolia was able to recover quickly, inside the 60-day deadline mandated by the Environmental Protection Agency. But over and above the issue of crisis management, Veolia wanted to participate in setting up the overall resilience strategy.

At the time, Veolia was examining new solutions that the company could deliver to its public-sector partners to help them deal with the systemic shocks they have to face. It was therefore only natural for Veolia, along with other private sector actors, to join the discussion initiated by The Rockefeller Foundation about forming the 100 Resilient Cities network. Through this international platform, Veolia interacted both with Swiss Re, a major player in the reinsurance industry, and the city of New Orleans. In 2016, in a common desire to move from words to action, Veolia, Swiss Re and New Orleans signed the first public-private partnership agreement to focus on urban resilience.

Mitch Landrieu, a former Mayor of New Orleans, sums up the partnership dynamic: "Resilience allows several things for a city. First, if the city can become resilient, it can prepare itself better because it takes full account of the difficulty of doing so. Next, the city will know how to put in the time needed to build not just the right infrastructure but also, more broadly, the social capital needed to rebuild homes, businesses and communities. Companies like Veolia and Swiss Re work with local governments to help cities really implement resilience."

Implementation is based on a more holistic approach to risk and on the city's capacity to work as an entire ecosystem by breaking down the silos that are a feature of all organizational structures. It is no longer a case of thinking about specific risks but instead of taking a more comprehensive approach to a city's resilience.

The New Orleans after hurricane Katrina - © Veolia



The unique feature of the partnership between Veolia and Swiss Re in New Orleans is that it uses specialist complementary skill sets to build up resilience across a territory. The methodology employed involves two main stages: assessing the vulnerabilities of the urban water system (drinking water, wastewater, drainage, etc.), starting with the two municipal water production and wastewater treatment plants and identifying critical infrastructure; and then designing a strategic roadmap with a detailed action plan to improve the management of critical resources.

"STARTING FROM THE COMPLEMENTARITY BETWEEN VEOLIA'S AND SWISS RE'S SKILL SETS, THE IDEA WAS TO CARRY OUT A JOINT ASSESSMENT OF THE CITY WATER SYSTEM (DRINKING WATER, WASTEWATER, DRAINAGE, ENERGY SUPPLIES, ETC.)."

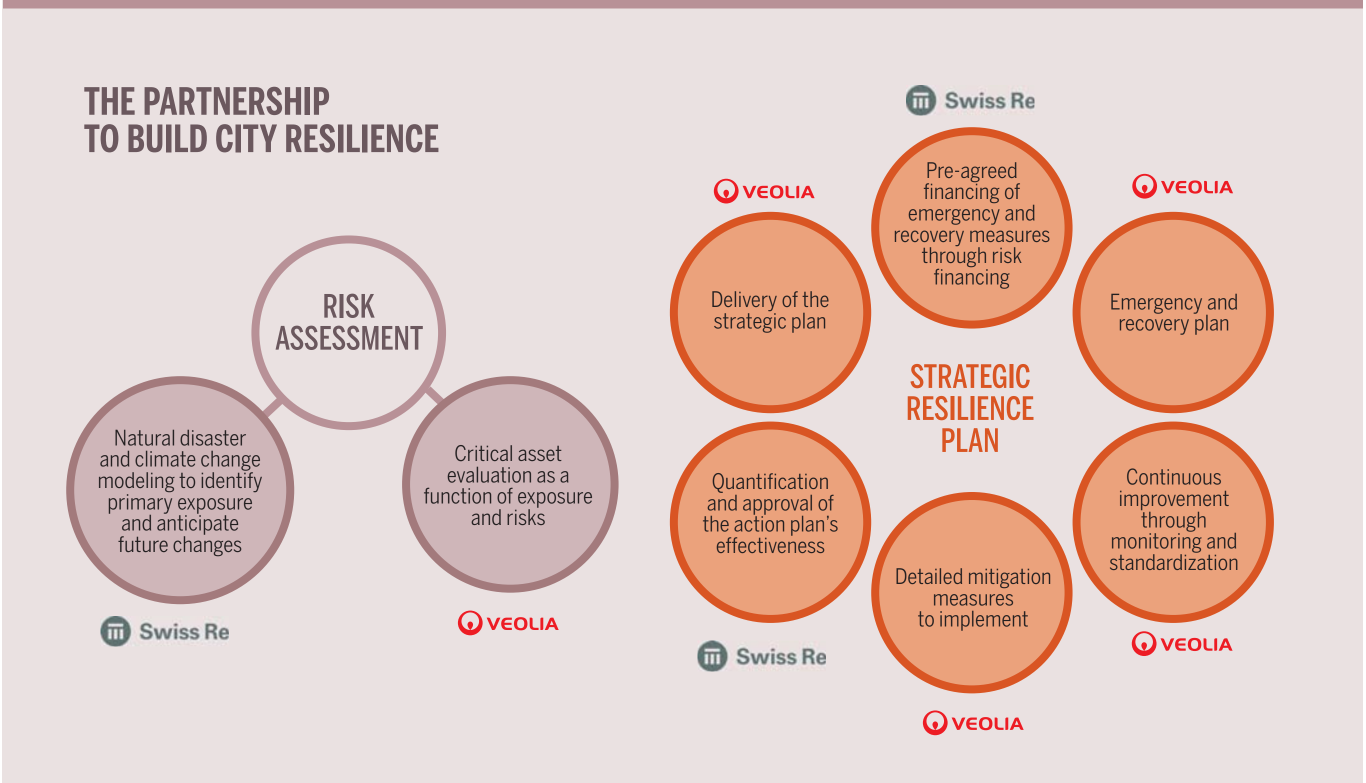
1. VULNERABILITY AND RISK NEEDS ASSESSMENT

Thirty experts from both companies conducted various audits over an eight-month period from April to December 2016. Veolia compiled a complete detailed inventory of the territory's 200 water infrastructure assets, worth an estimated $1.7 billion. The role of this team of experts was to identify and quantify each site's vulnerabilities in terms of the flood threat. They used 150,000 hurricane weather models created from observations of recent events in the Atlantic Ocean and the Gulf of Mexico, and made projections based on selected climate models for 2050. Working from this very detailed understanding of assets' exposure to physical risks, Swiss Re was then able to model the economic losses. The aim was to provide a financial risk assessment for each site, complementing the initial inventory, and pinpointing the sites with the greatest exposure to potential impacts.

2. DEFINITION OF A STRATEGIC ROADMAP

Working from the joint assessment, the next task was to establish a strategic roadmap designed to reduce the recovery time for the New Orleans water ecosystem and to mitigate the financial risk through an optimized investment strategy, thereby increasing disaster resistance. This second stage involves working to support New Orleans as it implements the changes needed for local authorities to roll out the detailed plan. Veolia's role is to guide execution of the strategy, with Swiss Re responsible for assessing the strategy's efficiency in order to continuously improve it.

How responsibilities are shared between Veolia and Swiss Re



2. AN ECOSYSTEM APPROACH BASED ON PERFORMANCE TO IMPROVE CITY RESILIENCE

Resilience requires a comprehensive, ecosystem-type approach because no actor can provide a solution alone. The interest of the partnership lies in the complementary skill sets of Veolia and Swiss Re, as much for the inventory and risk assessment stage as for the drafting and implementation of the resilience strategy. Veolia is an expert in resources and infrastructure, while Swiss Re brought its knowledge of natural disaster and climate change modeling to identify the major risk exposures.

1. A COLLABORATIVE, PERFORMANCE-FOCUSED MINDSET

The collaboration between New Orleans, Veolia and Swiss Re seeks to benefit all stakeholders. This performance-focused mindset drives all stakeholders to think in terms of performance, cost avoidance, impact and innovation.

It is also important to ensure that each partner benefits from the collaboration:

- **For the city**: strengthening the city's resilience makes it possible not only to better anticipate risks and cut post-disaster recovery times, it also improves the city's attractiveness, competitiveness and credit rating. It helps to identify the investments needed to reinforce key risk-sensitive infrastructure.
- **For residents:** the partnership should help to deliver a safer environment. It also offers the possibility of fostering citizen actions, turning residents into actors in these projects and in the implementation of resilience. The aim is to foster residents' abilities to efficiently take action and contend with critical failures. Social cohesion and the strength of the urban community is central to the resilience strategy.
- **For Swiss Re**: resilience constitutes a growth driver for Swiss Re, providing the company with a chance to engage in more far-reaching dialogue with city authorities. Although insurance is conventionally viewed as a cost, this project shows that what is most important is assessing its impact, effectiveness and performance over the long term.
- **For Veolia**: this is a chance to consolidate its innovative approach to resilience and develop new combined offers and solutions. Drawing on in-house expertise, the company is now able to offer support during each critical phase: initial inventory, designing a plan of actions, and implementing the proposed disaster mitigation solutions.

2. SEVERAL TYPES OF INNOVATION ARE NEEDED TO SCALE UP THIS TYPE OF PARTNERSHIP

There are three challenges to overcome if resilience strategies are to be durably scaled up.

1. **Innovation in organization: more cross-disciplinarity**
It is vital to develop a culture of forward-planning among politicians and business leaders. This is a complicated task as their thought processes tend to focus on post-disaster recovery systems. The appointment of Chief Resilience Officers by the 100 Resilient Cities network makes it possible to reimagine and accelerate coordination and cooperation between public-sector departments, which is essential for implementing resilience strategies.

"THERE ARE TWO PRIMARY FACTORS THAT DRIVE THE SUCCESS OF PARTNERSHIPS LIKE THE ONE BETWEEN VEOLIA AND SWISS RE IN NEW ORLEANS: COMPLEMENTARITY OF THEIR SKILL SETS AND A PERFORMANCE-BASED MINDSET."

2. **Innovation in finance**: financing resilience is currently mainly the responsibility of cities. But local public finances are very often under severe pressure and preventive actions are frequently seen simply as additional short-term costs. It is vital to imagine new economic models to convince other stakeholders – local economic actors in particular – to contribute to financing. To do so will require creating platforms or enterprise coalitions that share both a vision of resilience and a long-term economic interest.

3. **A territory-wide approach**: it is important to look beyond city borders and to think in terms of a territory as a whole to arrive at comprehensive resilience. Where flooding occurs, Veolia's expertise in the matter cannot be shackled by administrative boundaries. Understanding the wider picture, such as patterns of water behavior in a river basin, is essential. This is confirmed by Veolia's experience working in metropolitan Milwaukee since 2008 with 28 Wisconsin municipalities on the western shores of Lake Michigan.

CONCLUSION

The partnership between Veolia and Swiss Re in New Orleans is currently the first public-private partnership to focus on urban resilience. It uses an innovative methodology to improve prevention and forward-planning in the face of the growing risks that more and more cities have to deal with. The partnership hopes to play a part in initiating a paradigm shift: no longer thinking of resilience as a risk, but instead as an opportunity for cities, residents and private-sector actors. Resilience can be a means for cities to become more attractive, competitive and innovative, and to attract talents. For this shift to occur, actors from the public and private sectors need to realize the importance of a forward-planning mindset, to look for new models to finance resilience, to raise residents' awareness of these issues, and to think of resilience in a wider sense as it impacts cities and the territories that surround them.

Perspectives of a reinsurance company on resilience: three questions to Ivo Menzinger, Swiss Re

A graduate of the Federal Institute of Technology of Zurich, Ivo Menzinger has led the Europe, Middle East and Africa region and public-sector solutions at Swiss Re since 2017. Having worked for the company for 20 years, he has a broad background across client management, product development and strategy.

1. As a reinsurance company, what role does Swiss Re play in helping cities build urban resilience strategies?

Ivo Menzinger: Swiss Re is a reinsurance company that was founded in 1863 in Switzerland. This means that we provide financial protection to insurance companies when they are not able or do not want to keep certain risks on their own balance sheet. In the case of natural disasters, for instance, insurance companies need to make massive payouts to their customers in a short period of time. Reinsurance intervenes in such cases to protect insurance companies from situations involving great losses for them. Our expertise as a reinsurance company is to understand, evaluate and manage risks as well as calculate risk premium.

Today, the contribution of insurance companies in terms of covering risks related to natural disaster is quite low in emerging markets but also in developed countries. For example, in the United States, only 10% of Californian residents are insured against earthquakes. Still, there is no doubt that more and more cities will unfortunately face natural disasters in the upcoming years.

That is why, in 2011, Swiss Re launched a new business unit called "Global Partnership" as a response to this challenge. While the insurance industry typically focuses on the protection of private assets, this business unit has the specific mandate to address directly the public sector to make it more financially resilient, helping it to use risk financing instruments. Our approach is to promote and develop proactive risk management strategies for public sector clients such as cities when they tend, for many different reasons, to apprehend risks in a reactive manner.

When it comes to insurance, the current situation is often the following in cities: depending on the jurisdiction, public buildings (schools, city halls, etc.) are insured while for infrastructure (road or bridges, etc.) the costs of business interruption or disaster relief are not covered. We consider that pre-financing is a powerful tool for public authorities trying to anticipate risks. So Swiss Re is working on innovative projects where insurance is used to build resilience and not only to cope with a catastrophe. This would be our contribution as a reinsurance company to help cities build urban resilience strategies.

Parametric insurance mechanisms are a good example to illustrate how insurance enables risks to be mitigated. I have two interesting examples in mind. First, Swiss Re supports the World Bank insurance vehicle called Pandemic Emergency Financing Facility (PEF) created in response to the Ebola crisis in 2014. During this crisis, it took months to make funds available. With the PEF, if you have confirmed laboratory cases and other data reported by the World Health Organization of serious virus outbreaks, cash payments are made to finance response operations on the ground. It prevents the epidemic from spreading and potentially developing into a pandemic. Another good example – beyond cities but resilience is also about other geographical areas – is the work Swiss Re has been involved in in Kenya using satellite technology to identify drought. We monitor vegetation health and make a payout to affected pastoralists directly via mobile money. With these funds, they can buy water and food for their livestock so they don't have to sell their productive assets.

Of course, all risks related to resilience cannot be insured. Cities trying to build a resilience strategy often define wide areas of risks. For example, some of them identify social cohesion as a key issue to address. For these types of risks, you can hardly set up an insurance product because it is almost impossible to measure it. But more and more we are able to measure very different types of risks such as drought or outbreak of epidemic diseases mentioned above.

2. In 2016 you signed the first public-private partnership to build a resilience strategy with Veolia and the New Orleans authorities. Could you explain the role and responsibilities of Swiss Re in this partnership?

I.M.: In this public-private partnership, the first role of Swiss Re was to produce an assessment of financial losses regarding the information collected by Veolia on the assets of the Sewerage Water Board Authority of New Orleans. The objective is basically to determine how often an event such as flood could happen and how expensive it would be if the risk materializes. So, we use tools that can simulate events such as flood in a quite sophisticated manner to determine characteristics of various scenarios of extreme flood events and perspectives of financial losses, notably the potential economic damages to the city.

After this first step, we made other assessments based on what Veolia calls "hardening certain assets" in the sense of strengthening them (for instance: investing in flood resilience measures). The whole idea is to define which investments would be the most efficient from a cost-benefit analysis viewpoint and what would be the impact on the financial risk. The ultimate objective is to optimize the recovery time for these assets to guarantee vital functions for the city and reduce the financial impacts of natural disasters.

3. Many cities and local governments are facing budget cuts and may not prioritize investing in solutions to prevent risks that may or may not materialize. What is your answer and arguments to convince cities to invest in resilience?

I.M.: The major improvement that insurance can bring is to reduce the volatility in a city budget and increase planning certainty. As a city, you invest a predictable amount of money in a pre-financing solution. This system can apply to all cities from the wealthiest to the poorest. With pre-finance, city governments are just spreading out these unforeseeable costs that they would have to spend anyway.

But it is certainly challenging to convince city governments as they tend to be more reactive than proactive while facing climate catastrophes. They often levy tax revenues or count on donations to deal with the consequences of a catastrophe. If you decide to subscribe to an insurance and nothing happens, it could be perceived as an additional cost in the budget rather than a long-term investment, which it actually is. So, it could be tempting for politicians to wait and pray that nothing happens during their mandate.

Nothing short of a paradigm shift from ex-post financing to ex-ante financing is required. Foresight can help frame a robust financial resilience plan. Insurance is one of the mechanisms to achieve it along with others such as setting up a budget reserve. Increasingly, this shift is happening, helping build a stronger case for resilience.

"OUR APPROACH IS TO PROMOTE AND DEVELOP PROACTIVE RISK MANAGEMENT STRATEGIES FOR CITIES WHEN THEY TEND, FOR MANY DIFFERENT REASONS, TO APPREHEND RISKS IN A REACTIVE MANNER."

EMPOWERING "SMALL FLOWS" IN THE URBAN FABRIC: experiences from Japan

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Aerial view of K-TOWN
K-TOWN was designed by the author and APLdw. Photo by Toshiharu Kitajima, 2017

Born in 1949, Hidetoshi Ohno is Emeritus Professor at the University of Tokyo and the principal of the architectural firm APL design workshop. He published *Fibercity Tokyo 2050'in* 2006. In the updated publication in 2016 *Fiber City, A Vision for Cities in the Age of Shrinkage*, he proposes a new theory of urbanism for shrinking cities in the post-industrial era, connecting "fiber units" in the city to redesign the information, transportation, and industrial networks, as well as the landscape. Hidetoshi Ohno is a member of JIA (Japan Institute of Architects) and AIJ (Architectural Institute of Japan).

KEYWORDS

- URBAN FABRIC
- ARCHITECTURE
- FLOWS

In the context of "Shrinking Cities" experiencing a decrease in population and facing multiple and globalized risks, the theory of urbanism must be reconsidered. Current urban planning relying on "big flows" needs to be challenged to empower local solutions and help tackle the environmental, social and economic challenges that lie ahead, notably in Japan. While big flows rely on a further, faster, larger-scale philosophy, with externalities that economically exclude marginal territories, small flows, on the contrary, seek to strengthen urban resilience and foster economic development through local solutions. Smaller urban interventions in the urban fabric could indeed help cities survive in the age of shrinkage. The scale and the responsiveness of small flow projects – three examples from Japan from senior mobility to corporate housing are presented here – allow their management to be accessible to small organizations, to reflect local diversity and to be easily accessed by the public while achieving socio-economic impact.

INTRODUCTION

Many cities face risks. In Japan, a city such as Tokyo will experience – among other risks – a rapid decrease of population and deterioration of infrastructure. In the Age of Shrinkage, urban planning and architecture need to be reconsidered in the megacity as well as smaller-scale cities. During the 21st century, "Big Flow" – meaning the flow of things "further, faster and on a large scale" – has become predominant within cities. However, for cities to become more resilient, it seems important to empower "smaller flows" meaning connecting smaller "fiber units" with each other and changing the urban structure through small interventions in the urban fabric. Three examples of urban interventions that favor Small Flow over Big Flow are presented in this article.

1. CONTEXT IN JAPAN: CHALLENGES OF SHRINKING CITIES AND CURRENT URBAN PLANNING

1-1. THE THREE CHALLENGES FACED BY JAPAN

Japan is facing three big risks: (1) demographic change, (2) natural disasters and (3) public debt.

(1) Concerning demographic change in Japan, depopulation and the aging population are serious issues. The birthrate in Japan is still less than 1.5. Japan's population is predicted to fall to 60 million by the end of this century (in other words, half of the present figure according to the medium-fertility assumption). The elderly population will be nearly 40 million before the year 2060, or 40% of the entire population at that time. [Fig.1]

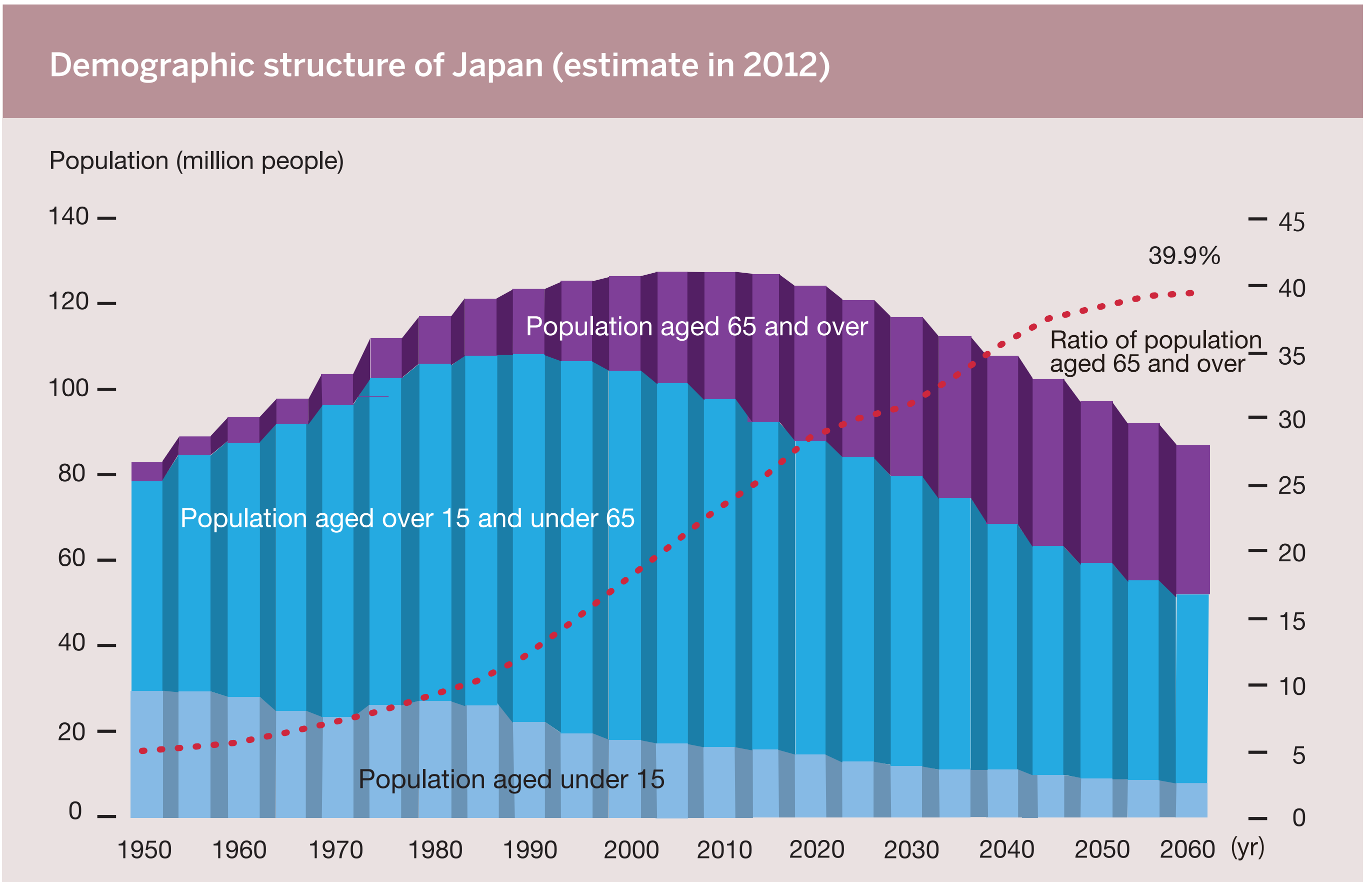
Depopulation causes industrial production to drop and the market to shrink. In the city, there will come to be more and more vacant houses, closed shops and unused public facilities. As income from taxes falls, governments will not be able to afford the expenses of maintaining civic facilities.

The increase in the elderly population may also cause production to drop and raise governmental expenditures on medical and nursing care.

It also means that, on the household level, many elderly people may become single and some may even live in poverty. Still, there is no denying that even the physically and financially weak should be able to live in comfort in a democratic country. Mobility is one of the most fundamental conditions of life.

(2) Among natural disasters, earthquakes and subsequent disasters like fires and tsunamis (tidal wave) are the biggest menace to Japan. Typhoons also cause storms, floods and landslides. They attack the Japanese archipelago every summer and fall. Apart from them, the country also sometimes experiences volcanic eruptions. It is nearly impossible to predict the occurrence and intensity of an earthquake and it costs a lot of money and time to prepare measures against them, as it is not sufficient to reinforce a building alone and it is necessary to reorganize the city for safety in the event of a big earthquake.

In terms of disaster mitigation, planners are zealous about realizing their ideal and assume a strong hatred of the real city in front of them. High seawalls are being constructed in the coastal cities and villages attacked by the 2011 Tohoku earthquake and tsunami. The biggest problem with such high sea walls is that it is not possible



Source: Graph drawn by Ohno Laboratory, University of Tokyo, with data adapted from: Government of Japan Cabinet Office, http://www8.cao.go.jp/kourei/whitepaper/w-2013/zenbun/index.html. (Reference is written in Japanese)

Figure 1

to construct and maintain the same kind of seawall along every coast in Japan, even though most of the cities along the Pacific Ocean face equally dangerous chances of tsunamis. The only realistic measure for disaster prevention may be a combination of physical and non-physical means. Japan, in this sense, is far too inclined toward physical measures – in other words, construction.

(3) As for financial problems, most OECD countries have some form of debt, but Japan's debt is extraordinarily large and increasing. It exceeds twice its GDP. Statesmen say that this unhealthy financial situation is the result of the increasing cost of medical and nursing expenditures as well as interest payments. But public construction should also be added as a reason for this debt. Japan developed into the second largest economy in the world in a short period of time after the Second World War. The key to this achievement was the government-guided development of industries and a Keynesian policy. The improvement of public facilities as a Keynesian strategy is extremely effective when infrastructures are not yet fully developed, as in Japan in the 60s and 70s. The construction of social infrastructure directly stimulates economic activity and improves living standards. On the other hand, the success of this policy led to the mistaken belief that city planning meant planning the construction of urban facilities.

These three challenges – demography, natural disasters and public debt – are, in a sense, unique to Japan. However, some common problems inherent to the 21st century can also be observed. Those regions where the birth rate is high will not be able to maintain their productivity when they get rich. Countries enjoying economic prosperity will not be able to grow forever. It is also important that every region on earth should worry about global warming problems today. Generally speaking, growth and development will not be the same as in the 20th century. Many regions will sooner or later experience the same difficulties that Japan faces now. These difficulties are derived from the transition from growth to decrease, or from expansion to shrinkage. The biggest challenge in the 21st century is how humanity can overcome this unprecedented transition.

1-2. PREDOMINANCE OF BIG FLOW OVER SMALL FLOW

Another problem in the 21st century is the predominance of "Big Flow," which has become more and more overwhelming over the years. Big Flow can be defined as the flow of things "further, faster and on a larger scale." This "flow" includes transportation as well as the economy, information and energy, among others. Looking back, human history can be described as a history of technical innovations for Big Flow. For example, technical progress in ship building and sailing made geographical discoveries possible and brought gold as well as tomatoes and potatoes to Europe. They yielded enormous wealth to the Iberian Peninsula and enriched European dining. Richard Arkwright created power by using the flow of the river to make cotton clothes an affordable commodity. The Industrial Revolution laid the grounds for a world empire for Great Britain.

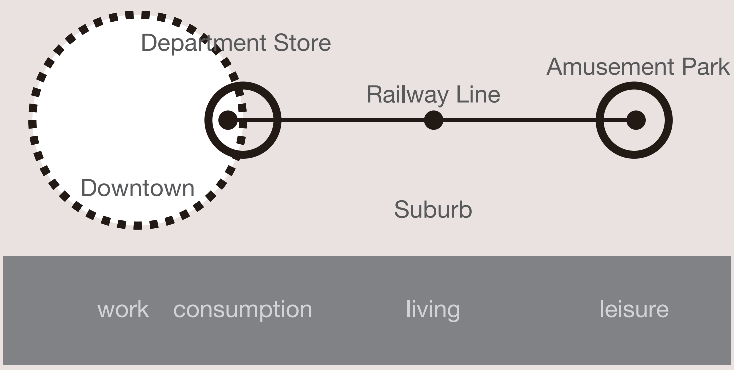
Before the mid-19th century, Japan was divided into quasi-independent domains under a feudal system. It was after the civil war that the modern constitutional monarchy was established. One of the first measures taken by the new central government was laying out the railway and postal systems.

In the 1920s, suburbanization started in Japan. Railway systems connecting the city center and the suburbs made it possible for the middle class to live away from the city center and gave them fresh air and life among the greenery. With this big change in city form, a businessman called Mr. Ichizõ Kobayashi [Fig.4] devised a business model for suburban development.

The Shinkansen was the first bullet train in the world, developed by Japan. It was for the Tokyo Olympics in 1964 and was developed as a means of connecting the two main areas in Japan – the Tokyo metropolitan area and the Kansai area, which includes Osaka, Kyoto, and Kobe. The fastest train prior to it had taken 6.5 hours between Tokyo and Osaka, while the Shikansen required only three hours. Since then, the Shinkansen network has been constantly expanded to cover the four main islands of Japan.

It is important that speed can change domestic geopolitics. When movement between cities was limited to railways traveling about 100 kilometers per hour, multiple cities serving as commercial and cultural centers could coexist within a single prefecture. But when travel speeded up to 200 kilometers per hour, many of those cities fell by the wayside. Only a limited number of cities such as Sapporo, Sendai, Tokyo, Yokohama, Niigata, Kanazawa, Nagoya, Kyoto, Osaka and Fukuoka have prospered; each dominates a large

Development strategy along the Hankyu Railway



Source: Drawn by Ohno Laboratory, University of Tokyo, "Fibercity Tokyo 2050", The Japan Architect 63, 2006, p.77

Figure 4

commercial sphere of influence that extends beyond prefectural borders. Big Transportation has developed by wiping out Small Transportation at the same time. Streetcars operated in 67 cities in Japan from the 1930s through the 1950s, and closely-knit bus networks had also existed.

What happened with the Shikansen is that most small and medium sized cities have declined in exchange for the prosperity of a small number of cities. After the Shinkansen began its operations, former main lines were demoted to local lines. There were many cities on former main lines where the limited express train service was abolished and a Shikansen station was not built. These cities declined.

The automobile has affected contemporary city form in much the same way as the railway. Because the prewar suburbia established by Ichizõ Kobayashi was formulated on the railway transportation system, it had a linear configuration. The contemporary suburbia formulated on automobile transportation, however, has a dispersed configuration like a nebula.

Development of the Internet has accelerated the velocity of information. It has enlarged the retail industry. Thanks to the online retailer Amazon, anyone – even someone living in a remote, rural area – can purchase books from the world's biggest bookstore. Although this may seem like a dream come true, it is a nightmare for local economies. When a purchase is made from Amazon, everything except for the wages of the local home delivery service employees is swallowed up by the company headquartered in Seattle; this also includes the consumption tax. Big Flow sucks dry local economic vitality and weakens localities. When we rely solely on Big Flow, we eventually undermine our own economic environment.

There are many flows in the human body, for instance, breathing, eating, sweating and blood circulation. Blood runs in a system of veins. It is hierarchically organized, its capillaries are very fine and it spreads densely. Big Flow seems to choke these capillaries.

2. THREE PROJECTS TO EMPOWER SMALL FLOWS AT THE CITY LEVEL

As described above, every city – at least cities in a mature society – faces a few big questions. One is how the city can survive in the age of shrinkage. The other is how the city can empower Small Flow under the predominance of Big Flow. Modernistic

Green partition - One of the proposed urban improvement strategies implemented through the intervention of fibers

Source: Drawn by Ohno Laboratory, University of Tokyo, "Fibercity Tokyo 2050", The Japan Architect 63, 2006, p.36

Figure 6

city planning cannot deal with such questions. This is the reason why we need new urbanism. One prospective answer is to develop a method of changing (improving, adapting, adjusting) the urban structure through small interventions in the urban fabric.

These three projects that I have led, presented below, are relevant to this idea of small interventions.

2-1 FIBERCITY: A VISION FOR CITIES IN THE AGE OF SHRINKAGE

The first project is a book entitled *Fibercity,* published in 2016.

This is a polemical and pragmatic book that includes urban projects for the reorganization of Tokyo and Nagaoka to maintain their vitality, even in the age of shrinkage. [Fig.5] Fibercity is also a planning theory dealing with existing cities that attempts to control place and flow inside cities simultaneously through the manipulation of relatively small linear elements that I call "fibers." Eleven projects are proposed in the book. Green Partition is one of them. Green Partition is a strategy by which the spread of fires after earthquakes is arrested by dividing high-risk disaster areas into small sections with long, narrow green belts. [Fig.6]

Victims of earthquake debris do not constitute the greatest number of earthquake casualties in Japan. Rather, the highest number of casualties to date have occurred due to fires caused by earthquakes in the Tokyo metropolitan area in 1923 and Kobe in 1995. Because most of the houses at the time were wood constructed, they were light but flammable.

As fires after earthquakes occur in many places simultaneously, fighting such fires is very hard. It is therefore important to replace such flammable structures with fire-resistant structures and firebreaks to prevent these fires from spreading.

Improvement measures for such flammable districts have been two-fold up until now: road widening and consolidating narrow housing lots to create fire-resistant collective housing complexes. Road widening projects have been implemented by local governments in an effort to create firebreaks to prevent fires from spreading, improve access for fire-fighting vehicles, and secure escape routes for inhabitants.

But in fact, it not only takes an enormous amount of time to expropriate residents along the planned roads, but the project budget swells as the cost of expropriating increases. With our proposal, even if a disaster were to strike, the spread of fire would be minimized and precedence given to the safe evacuation of inhabitants to secure, open spaces. In order to achieve this goal, hazardous areas should be finely divided by green partitions that will help arrest the spread of fires.

In the course of time, as empty land becomes available, it can be absorbed into the green partition, with parts of it being converted to areas of refuge and others used as evacuation routes. At the same time, the green partition will introduce vegetation into areas that lack it, bringing life to artificially barren lands. To make this plan a reality, 8% of the land in each district will need to be converted to these proposed green partitions. This will cause land values to increase and offset the loss of properties used toward the construction of these green partitions.

2-2 SMALL MOBILITY FAIR

The second project, "Next Mobility bazaar" is a fair for small mobility services organized in Kurobe in 2017.

In a few decades, Japan's elderly population will constitute 40% of the national population. Although most of the elderly will not need care at a nursing home, walking around will still not be an easy task for many of them. When people become old, their cognitive capacities more or less weaken. Newspapers often report on traffic accidents caused by the elderly. Some drive their cars on the opposite lane, while others step on the gas pedal instead of the brakes.

In addition to their individual conditions, the urban condition also becomes inconvenient for such people. All enterprises, from supermarkets to family restaurants and fast food stores, are concentrated in shopping malls or along bypasses in cities that are premised on the ownership and use of automobiles. As a result, there has been an increase in areas where people without access to automobiles also lack access to their daily meals. People who lack such access are referred to as "shopping refugees" in Japan, while such areas are called "food deserts" in England. Some people feel helpless in a society so overly dependent on the automobile.

In an aging society, some utopian ideas of mobility conceived in the age of growth may sometimes become dystopian. For example, there is a housing estate in a suburb of Tokyo that was planned on the idea of a cul-de-sac in the 70s. As the central area of the estate is reserved for pedestrians only, residents are forced to walk in their everyday lives. Many residents who bought their homes here in the 70s have become old and find it difficult to walk. A non-profit organization has started to help them with a bicycle taxi service.

Professionals of the physical environment should be obliged to create a society where any disabled person can go where they want, when they want. The Next Mobility community, led by the author, has held, a fair inviting many organizations dealing with small mobility services/ products, even for infants and young adults, twice in different cities. A further goal is to create a forum for engineers and companies interested in small mobility. The objective of this exhibition is to demonstrate people's right to move about, especially for the weak such as the elderly, children and those who do not have a driver's license or a car. This is a question of human rights or democracy. Everyone should be given the opportunity to move when and where they like. What is needed is a kind of mobility somewhere between the automobile and foot. This is the idea behind "small mobility." [Fig.8]

Mrs. Uchiyama began to experience pain in her knee 10 years ago when she was 65 years old. She tried to find an easy vehicle but none of the ready-made, motorized wheelchairs attracted her. So she decided to make what she liked on her own. She started a development process with engineers and converted her factory in China, where they used to manufacture paper strings for ceremonial occasions, into a factory for her product. Finally she succeeded in creating a very compact and user-friendly motorized scooter. According to her, since this kind of vehicle is subsidized as a welfare machine by the national nursing care insurance, major manufacturers can set high prices for them. Their supposed users are therefore capable of affording them. However, people who are eligible for the insurance need to be officially recognized as people requiring long-term care. Unfortunately, most of these people have likely already lost their drive to go out. She believes those who really need this kind of mobility machine are those for whom care is not yet required. Such people, however, must purchase the machine by themselves — in other words, without being subsidized by insurance. Mrs. Uchiyama therefore strived to provide her machine for an affordable price and succeeded in doing so. While autonomous car technologies may be useful for such elderly people, the elderly should also activate their muscles and brains as much as possible. Because when we stop using our body, it will easily begin to weaken and fail.

2-3 K-TOWN

The third project developed with APL design workshop is a company dormitory in a town called Kurobe.

Kurobe is a small town with a population of about 40,000. It contains the factory campuses of YKK, an international company that manufactures zippers and building components such as window sashes.

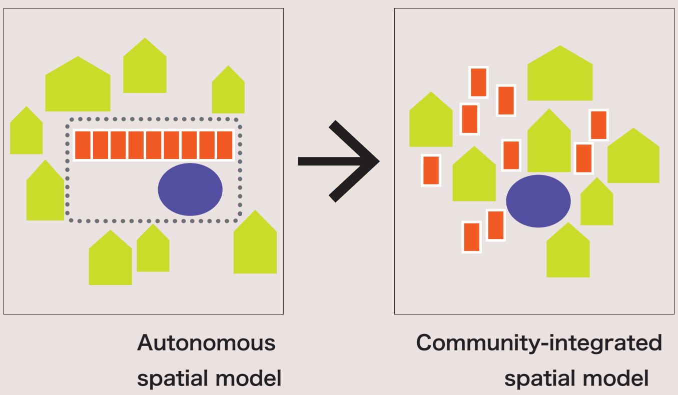
The YKK headquarter is in Tokyo, but they decided to move half of their headquarter functions to Kurobe for risk diversification after the Tohoku earthquake in 2011.

With this shift, they needed to move many of their staff to Kurobe. This was the reason for developing a new dormitory in Kurobe.

Just as YKK thought, excessive concentration in any one place may make a company vulnerable. Diversity is often the key for yielding dynamism. This is the reason why YKK's strategy is so attractive in Japan. Many enterprises hesitate to go out to local cities, even though they can maintain easy accessibility to Tokyo through ICT, bullet train and airplane. And what's more, they can also save money.

The most noticeable aspect of this project is that the dormitory's configuration is different from those of conventional dormitories. The most popular configuration for a company dormitory is an enclosed arrangement. This segregates the dormitory from its neighborhood. Our proposed plan integrates dormitory residents into the neighborhood. YKK chose this site near the railway station as a means of revitalizing the declining area by bringing in a younger population. As mentioned earlier, in most local cities, people like to live in newly developed areas where automobile life is easier.

Diagram for comparing two models for the company dormitory



Source: Drawn by APLdw, 2017

Figure 11

CONCLUSION

These three projects deal with different kinds of flows presented in different manners.

The first project presents a general theory about small interventions into the urban fabric with several strategies. In the second project, a new type of flow that is manageable by the weak enters into the scene of public mobility. In the third project, a flow of younger people appears in a stagnant city center through a private company's initiative and architectural presentation.

The strength of small interventions is that they can be managed even by a citizen group, small municipality or small corporation. They reflect the diversity in society and preserve some aspects of the uniqueness of local cultures. They can be easily comprehended and accessed by the public. Moreover, inconvenient results can likely be corrected because urban reformation through a limited scale of intervention is inevitably incremental. They help provide some room in a world virtually dominated by the cruelty of "Big Flow."

HACKERS AGAINST NATURAL DISASTERS: accustoming people to risk

Gaël Musquet,
Chair of HAND, Ashoka Fellow

Gaël Musquet trained as a meteorologist. His early working life as a civil servant saw him develop a passion for hands-on work and cartography. In 2011 he was one of the founders of OpenStreetMap France. In 2016 he set up Hackers Against Natural Disasters (HAND), a nonprofit group that sets out to use available technology tools to improve responses to natural hazards.

KEYWORDS

- CARTOGRAPHY
- HACKERS
- DISASTER SIMULATION
- TECHNOLOGY VOLUNTEERS

Guadeloupe, a French territory in the Caribbean, is one of France's regions most at risk from natural disasters. The archipelago faces six categories of natural risk – hurricane, flooding, earthquake, volcanic eruption, tsunami and landslides – that are features of life in all islands of the Caribbean. In 2016, Hackers Against Natural Disasters was set up with the primary aim of increasing resilience to these cyclically recurring threats. Every year since its creation HAND has participated in Caribe Wave, an annual tsunami simulation exercise held in the Caribbean region. HAND's contribution to this exercise involves developing innovative digital tools that are accessible to everybody. The goal is to be able to provide locals with effective early warning prior to disaster striking, and to restore power and communications (social media, amateur radio and smartphone apps) as quickly as possible. HAND's vision is built on the idea that everybody – men, women and children – are vital components in building a more resilient society.

INTRODUCTION

Founded in 2016, Hackers Against Natural Disasters (HAND) is a French-registered nonprofit organization. Its members are hackers, makers and doers, all driven by a willingness to use their skills, knowledge and determination to help their cause: using information and communication technologies to increase people's preparedness for cyclical natural disasters. This goal has become a doctrine that was inspired by, and evolved from, three founding texts:

1) *Article 3 of the Universal Declaration of Human Rights, which states that:* "Everyone has the right to life, liberty and security of person."

2) *Article L721-1 of the French Internal Security Code:* "Through their behavior, everybody is a contributor to civil security. Depending on the situations with which they are confronted and within the scope of their possibilities, they shall do their utmost to warn relief services and take the initial action required."

3) *The Sendai Framework for Disaster Risk Reduction (2015-2030), to which France is a signatory, which encourages better cooperation between residents and local and national governments.*

The framework sets out to promote people's active participation in their country's security. HAND, as described in its manifesto, seeks to act before, during and after natural disasters. Its primary lever is using innovative collaborative processes to develop new tools used to inform, train and alert local people about the risks they face.

HAND is an organization working to improve resilience and raise the place of disaster-awareness in local societies. Despite the important role played by technology, HAND's true ambition is to empower everybody to become valuable actors in ramping up resilience in their community and territory.

1. FROM OPENSTREETMAP TO HACKERS AGAINST NATURAL DISASTERS

In January 2010, an earthquake measuring 7 on the Richter scale hit Haiti. The consequences were devastating: over 300,000 people were killed, and as many injured. The financial cost was equally shattering, estimated at $7.9 billion, equivalent to 120% of Haiti's 2009 GDP.

This is when OpenStreetMap stepped in. The collaborative digital community exists to create an open map of the world and is constantly seeking new data to enrich its maps. Using the community's cartographical and IT skills, it was able to provide real-time maps of Haiti. Hundreds of technology volunteers all over the world set about assessing the state of the country's roads and bridges, identifying the location of refugee camps, flooded zones, water crossings, and even isolated people in need of help.

The method was very simple. The group analyzed images from satellites and drones overflying the region, and used specialist software to map what they saw and post the results online. All data are open and can be downloaded and modified by anybody. This tool was quickly adopted by international bodies on the ground, among them the World Food Program. This was the first time that a digital community had come together at the international level to collect and share data.

Determined to build on this momentum, French technology volunteers decided to set up a French branch of OpenStreetMap. The organization decided to adopt a collegial governance model with every member having the status of president. The Fondation de France was quick to identify the value of this work and to offer funding.

Working via HOT, its specialist Humanitarian OpenStreetMap Team, the organization responded to a number of recent natural disasters: the oil slick that devastated the coast of Louisiana in 2010; the Sendai earthquake, tsunami and accident at the Fukushima nuclear power plant in 2011; the 2014 Ebola epidemic in Africa; and the 2016 Wellington tsunami. Technology volunteers mobilized on each occasion, whether cartographers, bloggers, journalists or developers.

Once a disaster cell is activated, volunteers provide information that is crosschecked and approved by a second contributor. Their activities are not limited to cartography. Volunteers work to restore the internet and access to technologies. Others are specialists in social media for emergency management, able to repurpose the full gamut of tools provided by the digital industries for use in emergency management. This digital savvy is important for several reasons: alerting local people, passing back information from reliable sources on the ground, and stemming the spread of false rumors.

As a technology volunteer, most of the work is done remotely. But it very quickly becomes frustrating to be so far away and only intervene for a short time in a post-disaster scenario. The frustration is all the more intense because certain parts of the world face cyclically recurring problems: floods in spring or fall, forest fires in summer, or hurricanes in June and October.

Surely it must be possible to invent more durable solutions? This line of thinking led to a fundamental change of method and the creation of Hackers Against Natural Disasters.

2. CARIBE WAVE: A DEFINING EVENT EMBLEMATIC OF HAND'S DEVELOPMENT

In 2011, UNESCO asked OpenStreetMap France to join for the first time in Caribe Wave, a tsunami simulation exercise in the Caribbean. HAND was provided with a set of exercises to run on Guadeloupe, one of the highest-risk zones of any French territory. The islands are prone to volcanic eruptions, earthquake, tidal flooding and hurricanes. A Caribbean tsunami could potentially kill 500,000 people if locals were poorly prepared. For example, secondary accidents could rapidly occur at sea owing to the difficulty of locating the positions of merchant and pleasure craft.

The primary tools used during the first exercise were social media, with everything taking place on Facebook and Twitter. Working from Paris, dummy maps were sent out and dummy evacuations organized as we began counting the dummy victims of a fictitious tsunami. Things at the Paris end worked fine, but there was not much success on the ground. Back on Guadeloupe, the exercise was run by the local prefecture with very little involvement by local people. The exercise ran again each year, using the same decentralized model, from 2011 to 2014.

A radical change of method was rolled out in 2015. A five-strong team traveled to Guadeloupe where they collaborated with a dozen or so local activists: hackers, bloggers, amateur radio operators and community managers. They set up base on a beach on La Désirade, an island 25 kilometers from the main island. Despite the challenging conditions, the team was able to generate the electricity it needed and set up an ultra-high-speed radio network delivered via twin antennae: one on the hills of La Désirade and the other at headquarters.

The Caribe Wave exercise on Twitter: an earthquake hits the Lesser Antilles

Caribe Wave 2018 exercise

Caribe Wave 2018 exercise

The day before the exercise, they sent a message to the prefecture to explain what they were doing. Intrigued by this grassroots initiative, the prefecture nonetheless requested that the team refrain from contacting Guadeloupe as they were worried that people might not realize that the alarms were only a test.

In 2016, for the first participation as HAND, a crowdfunding campaign raised €33,000. A 12-strong delegation set up on Marie-Galante, 34 kilometers from the main island. They set about a highly ambitious program: drone flights, installation of seismic sensors, supervision of maritime and air traffic, development of a cellphone app to guide people to higher land, 3D terrain modeling, transmissions via a long-distance amateur radio network that also provided internet access, and more.

In 2017, the exercise was repeated thanks to funding from Caisse d'Epargne Alpes-Corse, which had acquired Banque des Antilles Françaises and was eager to engage in studies of risk-related problems in regions where its retail banks operated. This time a 16-strong team was deployed. The major innovation for this latest campaign was trialing a new tool to display alerts on car radio displays. The team was also joined by journalists who broadcast dummy reports from the AFP news agency.

A few months later, Irma and Maria struck the Caribbean islands and cut power supplies in Guadeloupe. Without power there is no modern world – no digital tools, no artificial intelligence or big data are available and, most critically, information ceases to circulate. People in the Antilles were ill prepared for such a catastrophic event. They were unable to connect to the internet or use their habitual networks and so they had no idea what was happening beyond their immediate locality. Rumors spread very quickly: attacks, rapes, prisoners on the run, etc.

In Guadeloupe, relationships forged during Caribe Wave exercises created solidarity networks able to report back on the situation on the ground and people's needs. Télécoms Sans Frontières, a French NGO, set about getting communications networks up and running again by installing wifi access points that enabled people in disaster-struck zones to update their families and friends. With the state absent for several days following the destruction of the prefecture, a community of techno-literate residents put their scientific and technical know-how to use for the common good.

Thanks to the existence of this community, HAND did not have to deploy an emergency team to Guadeloupe. But the organization's members did coordinate what was going on as well as send equipment and provide remote advice to their colleagues via a WhatsApp conversation.

After seven years' actions on the ground, the first contacts with local politicians in Guadeloupe came during Caribe Wave 2018. Every local mayor on Marie-Galante island took part in the exercise. Also, the Fondation de France continued to support the initiative, meaning that a 26-strong team was dispatched.

HAND currently operates exclusively thanks to volunteers and it is structured into several hubs:

- **Logistics**: central to all the group's initiatives, it organizes travel, accommodation, meals, equipment transportation as well as all the automobiles, aircraft or boats needed on site.
- **Radio**: comprises three amateur radio enthusiasts responsible for deploying the equipment needed to re-establish contact with the

neighboring islands, countries or continent. They are capable of establishing links over distances ranging from a few dozen to several thousand kilometers; the record is a 6,500-km link from Marie-Galante to Cherbourg.

- **Tourism**: exists primarily to provide reassurance about risks to travelers, a group often among the most vulnerable during a natural disaster. HAND aims to provide training to travel industry professionals and, for example, has already agreed a partnership with the Mercure Hotel on Saint-Martin.
- **Education**: works to raise awareness among students of all ages, from kindergarten to college. We are convinced that young people are the future of resilience. Children are often the best ambassadors for the exercises, performing them even better than adults. HAND works closely with Simplon.co, a specialist provider of digital education. The team at Simplon.co can be called on to create a platform to supervise air and sea traffic in real time, or software to issue alerts to local people.

3. RESILIENCE IS ABOUT PEOPLE

Although it might seem that HAND's approach is technology-driven, this is not the case. There is nothing particularly complex about the digital tools used and deployed on the ground. In reality, the strength of the project lies in the community that has grown up around the organization.

Resilience in any given territory comes first from the people who live there and who can become engaged with the issue. The challenge is not technological, it is profoundly political. Today, the culture of risk needed to build more resilient systems is almost – if not wholly – absent. Time is needed to get used to new ideas, if only to inform about risk without provoking needless anxiety.

You can only plan for resilience in times of calm, before disaster strikes. It is important to prepare the ground if solidarity is to prevail post-disaster. In Sendai in 2011, neighbors who already enjoyed good relationships with each other banded together to form the very first networks delivering support and assistance after the earthquake. Japan is an excellent resilience case study, a country where learning about the risk of natural disasters that can strike the archipelago is something that starts at a very early age.

There are three essential phases behind the effectiveness of any resilience strategy.

1. **Inform**: the population must know the risks they face, be it tsunami, earthquake or epidemic. This helps to put dangers into perspective. It is also important to make sure that tourists are made aware of possible dangers when visiting a country. In Indonesia, *Tsunami Ready* signs displayed at hotel entrances alert visitors to possible dangers and certify that the establishment has taken steps to prepare.
2. **Train**: exercises like Caribe Wave help people to learn how to react. This work should start right from early childhood so that children know what to do if disaster strikes. In Chile, the government has designed a web platform, *Familia Preparada*, which helps parents and children to prepare for a range of risks: volcanic eruption, fire, flood or earthquake. Users can download and print a summary sheet in the form of a cartoon strip that lists the recommended actions and roles each member of the family must adopt.
3. **Alert**: when danger is imminent, everybody must be warned. Even an alert three or four seconds before an earthquake is enough time for people to shelter under a table. What is important is that the protocols for issuing an alert are understood by one and all. Otherwise, there is a high risk due to a lack of responsiveness or, conversely, a widespread panic.

In France, there is a pressing need for a thorough semiological review to overhaul SAIP, the population alert and information system. Currently, as highlighted in the report prepared by senator Pierre Vogel,[1] people no longer understand the siren system and the variants used: is it a flood, earthquake or toxic gas leak? SAIP is obsolete.[2] It is time to decide whether it is better to use a siren, tweet, text message, TV or radio broadcast, or cell broadcasting. Cell broadcasts enable the authorities to display alerts on all cell phones located within any specified area. Many countries have already adopted this French technology, although it is still to find a home in its country of origin.

1 Report on the SAIP, the Population Alert and Information System, by senator Jean-Pierre Vogel, June 28, 2017

2 Update: in May 2018, the French government abandoned use of SAIP for alerting people about terrorist attacks, preferring instead to spread alerts through social media.

CONCLUSION

It is very hard to quantify the externalities for disaster simulation exercises, meaning the number of lives saved by preventive measures. However, when a crisis does hit, it is possible to observe the support networks that emerge, people who head out to check on their neighbors, who support an NGO or who are able to call in extra resources to help out.

HAND sets out to make local people more aware of risks so that they can act with greater autonomy when facing an imminent threat. In a perfect world, HAND will no longer exist in a few years' time. Once the state is able to deliver civil protection fit for the digital age, to manage social media in emergencies, alert the population in ways that it understands via the most suitable technologies, use drones to survey stricken areas, map and update land and property registers, and get the population accustomed to the risks it faces, then there will be no reason for HAND to exist any longer.

3. CONDITIONS FOR SUCCESS AND IMPLEMENTATION OF RESILIENCE STRATEGIES

The third and final section identifies key factors for successful resilience strategies and the conditions needed to guarantee their popular acceptance.

The overriding condition for success, as described in this issue, is the need to support cities as they set about defining and implementing their resilience strategies. The sheer breadth of the resilience concept means that putting together a strategy for urban resilience requires prioritizing actions. It is not possible for a city to suddenly become resilient in every sphere. To help with this process, The Rockefeller Foundation has established the 100 Resilient Cities initiative that seeks to help cities boost their resilience by providing them with access to a network, toolkit and financial support. The role of Chief Resilience Officer (CRO) is subsidized by The Rockefeller Foundation for a limited number of years, as explained by Arnoldo Matus Kramer, who occupies this post in Mexico City. Launched in 2013, according to Michael Berkowitz the initiative has led to the appointment of 90 CROs in cities worldwide and the release of 40 city resilience strategies, about half of them currently being implemented.

Funding from The Rockefeller Foundation is a clear indication of how important it is for cities to find economic models for financing resilience. Until very recently, cities tended to act in reaction to the risks they face. Resilience bonds, presented by Shalini Vajjhala and James Rhodes, are among the financial instruments designed to demonstrate that resilience is not simply a cost for cities, but can also be an opportunity.

The issue's second section examined the need to accustom people to risk. The role played by Facebook groups during the recent hurricane season in the USA is a good illustration of how a resilience culture is being adopted by local people. With contributions from thousands of individuals who can connect to each other in seconds and provide the granularity of detail needed to maximize the efficiency of state-led rescue efforts, resilience becomes collaborative.

Lastly, a comprehensive approach to urban resilience must also include the deployment of innovative policies to combat chronic social stresses such as the breakdown of relationships and social ties between residents. This is underlined by Jean-Christophe Levassor, who runs a creative space that is part museum, part community center and part socialization center, located in a district of Roubaix in northern France that has felt the full impact of industrial decline.

Mathilde Martin-Moreau,
David Ménascé
Coordinators

HELPING CITIES DRIVE TRANSFORMATION:
the 100 Resilient Cities Initiative

Interviews with Michael Berkowitz,
President of 100 Resilient Cities

and Dr. Arnoldo Matus Kramer,
Mexico City's Chief Resilience Officer

Bangkok

Michael Berkowitz has served since 2013 as President of 100 Resilient Cities - Pioneered by The Rockefeller Foundation. Previously, he was the global head of Operational Risk Management (ORM) at Deutsche Bank. Before 2010, he was the head of CSBC in APAC, and editor of Emergency Preparedness News, a Washington, DC-based newsletter for emergency management professionals.

Arnoldo Matus Kramer has been Chief Resilience Officer of Mexico City since 2014. He has more than 15 years of experience in climate change and environmental policies. In 2012, he co-founded Ithaca Environmental, a consulting firm providing counsel in climate change, sustainability, environmental finance and clean technology topics.

KEYWORDS

- ROCKEFELLER FOUNDATION
- SHOCKS AND STRESSES
- CHIEF RESILIENCE OFFICER

Pioneered by the Rockefeller Foundation, 100 Resilient Cities (100RC) was founded in 2013 as a separate NGO to help cities face three major threats and challenges: growing urbanization, globalization, and climate change. Initially, a commitment of $100 million dedicated to build urban resilience was made by the Foundation (the commitment has now gone up to $164 million). With this initiative, 100 Resilient Cities supports cities in building a Resilience Strategy aimed at identifying the main risks they are facing and the best way to tackle them. To help cities drive transformation, 100 Resilient Cities has set up different tools from financial to technical support. The initiative encourages cities to hire a Chief Resilience Officer (CRO) who is the single point of contact within a city's government. The CRO's mission is to both deliver the Resilience Strategy of a city by assessing risks and to monitor implementation of the plan. Today, 40 resilience strategies have been set up through 100 Resilient Cities with 90 Chief Resilience Officers in place in cities.

1. *Interview with* Michael Berkowitz

"100 RESILIENT CITIES WAS FOUNDED IN 2013 AS A SEPARATE NGO. AT THE TIME THE COMMITMENT FROM THE ROCKEFELLER FOUNDATION WAS TO WORK WITH 100 CITIES AND COMMIT $100 MILLION TO BUILD URBAN RESILIENCE."

Resilience in the context of cities is a very broad concept. What does resilience mean for an organization such as The Rockefeller Foundation?

Michael Berkowitz: Resilience is the capacity of a city to thrive in the face of shocks and stresses. Stresses and shocks are different things. Shocks can be earthquakes or terrorist attacks while stresses are more long term like air pollution or high levels of criminality. These shocks and stresses can imperil a city. Urban resilience is about the capacity to survive in the face of these risks.

What allows the city to be more resilient is a broad range of capacities. People often enter the urban resilience lens through public infrastructure. Public infrastructure is part of resilience, but it is broader than that: it is about community cohesion, diversified economy with a strong middle class. It's also about good governance, strong strategic planning and stakeholder engagement. All these very different things help cities strive in the face of crisis.

In 2013, The Rockefeller Foundation launched 100 Resilient Cities, which you oversee. What is the origin of 100 Resilient Cities, its vision and objectives?

M.B.: 100 Resilient Cities (100RC) was pioneered by The Rockefeller Foundation to mark the Foundation's 100th anniversary. The Foundation looked around the world and saw three major threats when it comes to cities: (1) growing urbanization, (2) globalization, and (3) climate change.

(1) Over 50% of the population lives in cities today, and by the middle of the century, it will rise to 70–75%. In this context, getting cities right is one of the most critical elements.

(2) The second element is globalization. What happens in one city impacts other cities around the world. This is true for positive impacts such as technologies and innovation. But it is also true for negative ones: a crisis in one place can disturb supply chains worldwide, diseases spread from one city to another, etc.

(3) The third trend is climate change. Cities are extremely vulnerable in the face of climate change because they sit on deltas and coastal areas and vulnerable populations are overexposed.

100 Resilient Cities was founded in 2013 as a separate NGO to help cities face all these challenges. At the time the commitment from The Rockefeller Foundation was to find 100 cities and commit $100 million to build urban resilience. The Foundation has since gone beyond that and committed $164 million. We are trying to change the way cities approach their risks and opportunities. Urban resilience is about being more integrated across sectors: private sector, government, civil society. It is also about integrated planning within the city by making sure for instance that water and utility people talk to the mobility and economic development people. The objective is that people approach cities in a more inclusive way. We are trying to have cities be more forward looking and strategic. It's very hard, because they have so many short-term issues that they need to solve that they often don't have the luxury to think of long-term strategic planning.

What are 100 Resilient Cities' approach and tools to improve cities' resilience?

M.B.: We selected 100 cities to be an inspiration believing that they will change ultimately the way 10,000 cities operate. The first thing we do is help hire a Chief Resilience Officer (CRO) who is the single point of contact across the city's government to force the city to think more strategically about resilience. Second, we help them build a Resilience Strategy, which is both a top-down and a bottom-up approach to identify where the risk lies and what the city can implement. The third thing is we connect cities to our platform of best-in-class partners that can help cities implement their strategy.

"WHAT WE'RE HOPING TO DO IS PARTNER WITH CITIES IN THE LONG RUN, BECAUSE THAT IS WHAT WILL CHANGE THE FOOTPRINT OF CITIES AND MAKE THEM SUSTAINABLE AND ULTIMATELY MORE RESILIENT."

Buenos Aires

Depending on their needs, cities can tap into this network of partners or the network of CROs, who have already gone about looking at their risk and opportunities in a new way.

Cities don't all have the same needs. Sometimes they need the political courage, and an NGO can help the mayor take a new approach. Sometimes the city needs technical capacity. *How do you integrate green infrastructure in a river revitalisation project?* 100 Resilient Cities has a network of technical experts that can help the city expand its knowledge and progress. In other cases, cities need finance. Usually cities don't need large pools of finance but rather small short-term finance that can help progress a project from one design phase to another. When cities take well-designed projects they almost always find finance either through private sector capital or development finance. But even though there is a lot of capital, the difficulty is advancing the project to a place where it can be financed.

So through our network of partners and member cities, we are able to help cities in those different ways.

100 Resilient Cities was created five years ago; have you been able to measure some impact?

M.B.: This is an area where more research is needed. We want cities to have better outcomes; next time there is flooding or a refugee crisis, we want them to perform better. Progress is hard to measure because such events are large and complex, with low frequency and high impact. What we can measure is the internal process. We have helped cities build rigorous strategies and we can measure how they've done it and if they have implemented the strategies. We can measure if that has brought more investment to the city and to what extent resilience has been institutionalized. We are partnering with a consultancy to help us build methodologies and we're beginning to make measurements on a project-to-project basis.

Improving measurement will be key for investors and for decision makers to prioritize where to spend resources.

Do you think awareness of and interest in resilience has grown since you started 100RC?

M.B.: Yes, definitely! In our network of partner companies, awareness has grown. I've been really impressed by the change that has happened in four years. At the World Urban Forum in Colombia four years ago, we talked about resilience and people were struggling to understand what it was. We went to the same conference four years later in Malaysia in 2018. This time people were in line with what it was, the conference even dedicated a whole day to it, and the conversation then turned to the how. That felt like a significant shift in four years. We played a role in that but it's also thanks to a larger community of public and private actors.

What are the priorities of 100RC for the coming years?

M.B.: There are close to 90 CROs in place in cities, 40 strategies have been released, 20 to 25 have started to be implemented. The next thing to do is to make sure that strategies are actually implemented and that doesn't happen over two or three years. That's the work of a generation. What we're hoping to do is partner with cities in the long run to implement those plans, because that is what will change the footprint of cities and make them sustainable and ultimately more resilient.

2. *Interview with* Dr. Arnoldo Matus Kramer

You have been working as the Chief Resilience Officer (CRO) of Mexico City since 2014. Could you elaborate on the role of CROs within cities?

Arnoldo Matus Kramer: The role of a Chief Resilience Officer (CRO) is twofold: (1) delivering the resilience strategy of a city by assessing and prioritizing risks and (2) monitoring and following up its implementation.

To define the resilience strategy, the first phase is often a stakeholder engagement process to identify the main priorities in terms of risks for the city. Participatory meetings with various city stakeholders are organized. It ranges from government representatives to scientific experts, or private and civil society actors. This process is often long and fairly complex. In Mexico City, because the city is vast and faces multiple issues, it took a year and a half to design the strategy.

At the end of this process, we came up with a concrete strategy, released on September 2016. We have three main priorities today in Mexico City in terms of resilience: seismic risks, water and mobility.

Resilience to seismic risks has become a priority with last year's earthquake. Another earthquake is inevitable in the future and we need to prepare. We want to learn from this experience, to build resilience. Back in 2014, the government of CDMX (Mexico City) created the Fund for Assistance with Natural Disaster (FONADEN) with an initial budget of $300 million of which 30% is addressing disasters such as earthquakes.

The second priority is water. In Mexico City, one of the main stresses would be overexploitation of the aquifer. In the future, it will become a big risk for the city as we can lose up to 50% of the water available to the city. Mexico City's Resilience Strategy has set up four goals to achieve a resilient water system: reducing water scarcity, promoting sustainable use of the aquifer, fostering a civic culture when it comes to water and integrating green and blue infrastructure.

The last priority is mobility. The ambition is to build sustainable mobility in the city, notably by increasing the number of pedestrians and cyclists and having an efficient and secure massive public transit system. Mexico is becoming a middle-class country and people increasingly buy cars, which translates into increased traffic at the metropolitan level. The CDMX New Mobility Model is based on principles prioritizing the most vulnerable users such as cyclists and pedestrians.

Once the strategy is designed and objectives set up, the challenge is to create the conditions to implement it. In Mexico, after being published, the resilience strategy quickly became institutionalized. We used the opportunity of the creation of a new Constitution to include resilience in it. The new Constitution adopted in 2017 mentions resilience in three of its major chapters: social inclusion, territorial management and governance.

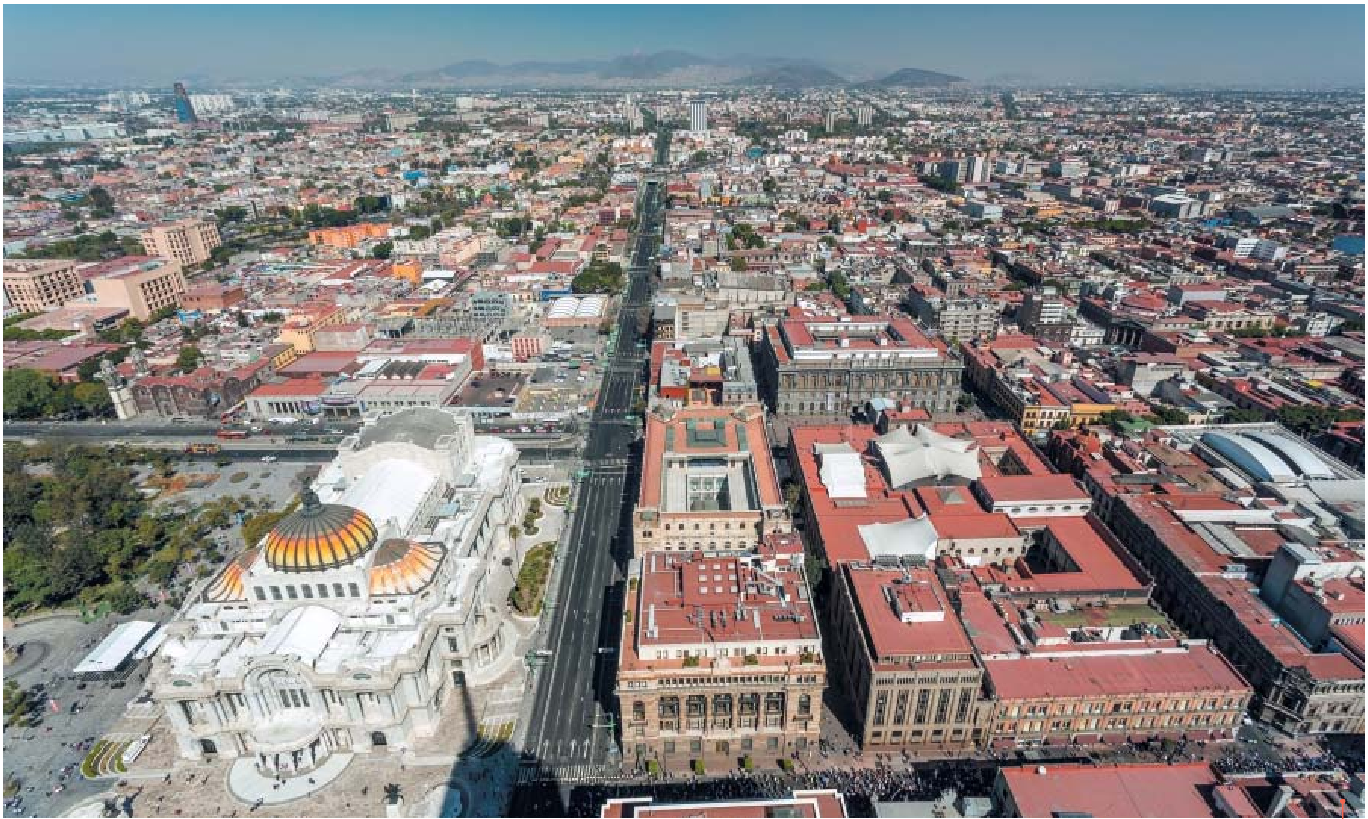
Implementing a resilience strategy also implies involving different actors, beyond public authorities. For example, in Mexico City, we have built a water fund that is managed by the non-governmental organization called Agua Capital, which has a coalition of private sector participants (such as HSBC, Citibank, Grupo Modelo, etc.) and NGOs (The Nature Conservancy, etc.), and government agencies (Ministry of Environment and the Resilience Agency). The objective is to work on water security to conserve forest areas close to the city that are critical to recharging the aquifer. We have a pilot project of 800 hectares managed with the community to conserve the land and improve agricultural practices to avoid lowering of the aquifer.

In short, the role of a CRO is very dynamic and extremely transversal!

What kind of support do Chief Resilience Officers receive from The Rockefeller Foundation both in the design and implementation phases of a city's resilience strategy?

A.M.K: 100 Resilient Cities provides support to cities in two main ways: financial support and technical assistance.

"THE ROLE OF A CHIEF RESILIENCE OFFICER (CRO) IS TWOFOLD: DELIVERING THE RESILIENCE STRATEGY OF A CITY BY ASSESSING AND PRIORITIZING RISKS AND MONITORING AND FOLLOWING UP ITS IMPLEMENTATION."



Mexico City

The first kind of support a city receives once it joins the 100 Resilient Cities network is financial. Chief Resilience Officers are chosen by the mayor for two years and the municipality receives financial assistance to create this position. Then a transition period starts where the city commits to taking responsibility for the resilience agenda. This means that you need support at the highest level to ensure that resilience is progressively institutionalized. In Mexico City, we are in that transition period. In the case of an unexpected event, The Rockefeller Foundation can also provide additional financial support. Due to the earthquake last year, Mexico City received additional support from the 100RC to support our work this year.

Technical assistance is also provided by the 100RC in two forms: assistance from a platform of partners working on resilience issues and support from other cities in the network.

First, around 100 organizations provide pro bono services to 100RC members. Cities often start a relationship with those organizations offering pro bono services and progressively move to long-term projects. For example, in Mexico City, we started working with the World Bank to create a resilience assessment framework in water-related investments. We also worked with Deltares to create a water resilience plan to preserve the Xochimilco, which is a UNESCO world cultural and environmental heritage site. We have built long-term relations with those actors. Now, with the earthquake we are reaching out to the actors from this platform to work on other topics related to seismic risks.

Second, there are networks of cities you can request assistance from. For example, a few months ago we organized in Mexico a workshop with nine other cities to work on seismic risks. Cities can also request more specific technical advice from experts in the network. In Mexico City, we're lucky to share offices with the 100RC Latin America and Caribbean Unit as we are building a resilience hub at the city, national and regional levels.

In your experience, what are the main challenges faced by a Chief Resilience Officer? In particular, is it possible for CROs to set up a long-term resilience strategy independent of the political agenda?

A.M.K: There are four main challenges for Chief Resilience Officers: maintaining interest from stakeholders, accessing data, financing projects, and indeed guaranteeing the sustainability of the resilience strategy in the long term.

The first challenge is to maintain the interest of different actors. This is a process and methodological challenge. Chief Resilience Officers keep engaging with various stakeholders, so we cannot do the same workshop every time. CROs need to be creative and innovative in the way they engage with stakeholders so that they keep coming and participating in our work.

The second is a data challenge. Some institutions are still reluctant to share their data. This is a challenge in many cities. In some cases, the data simply does not exist, in other cases researchers or institutions want to keep or protect their data for different reasons. Of course, there is a component of risk when releasing data to the public. Some data should be protected. It is important to create debates on what data is necessary.

The third issue is finding and financing innovative projects. We need to build robust projects and find innovative ways to finance them. In Mexico City, we are currently working with the World Bank and looking at the resilience of portfolios for the water system, so we will be able to prioritize projects according to their level of resilience.

The relationships and potential dependency on political authorities and elected representatives is the fourth challenge. Chief Resilience Officers are appointed by mayors. This means that when government changes, they may need to be assigned again, which is challenging. Still, a resilience strategy is not a government strategy but a long-term city strategy: in the case of Mexico City, the horizon is 2040.

There are many ways to reduce the dependency of the resilience agenda on political forces. First, it is important to have universities, companies and NGOs on board as they won't be subject to change during elections. Creating coalitions, beyond local governments, helps maintain a long-term agenda. The institutionalization of resilience in Mexico City is also a big step forward. After the inclusion of resilience in the Constitution, a separate organization, the Resilience Agency, dedicated to building resilience was created, of which I am the General Director. It has a dedicated budget and a dedicated team of 11 people. The resilience agenda has also been published in the official diary of the government, which makes it official, so it has to be taken into account by the government. Finally, to limit the dependency on current government, we are creating a monitoring and evaluation system for the actions associated with the Resilience Strategy that every actor needs to undertake in the long term for the strategy to be successful.

When discussing resilience, cities are very often at the forefront. Even so, to what extent do Chief Resilience Officers need to consider geographical areas beyond cities to ensure resilience?

A.M.K: There is no resilience for the city if you don't think at the regional level. This is particularly striking for water. The right scale for water is the water basin so you need to think regionally for water resilience. In the case of resilience to climate change, the scale is even wider as it is a global issue. This is why, in Mexico, we want to build not only a city regional strategy but support a national one.

I believe the next steps would be to spread knowledge on resilience to other cities and work with the legislative power to build innovative resilience legislation and finance.

On the first point, we already have tools to share knowledge and build capacities for other cities to think with the resilience lens. For example, in Mexico there is a national risk atlas, a climate change risk atlas that addresses all municipalities in the country. The network of current resilient cities can also help other regions around the world to integrate resilience in their planning and transfer their knowledge to other cities.

On the second point, building legislation in favor of resilience projects at the national level is also very important. In the case of the U.S., there is financial support for resilience challenges for innovative resilience projects, for example. We are already engaging with ministries in Mexico, but we need to go further. This is an opportunity for the coming years.

"THERE ARE FOUR MAIN CHALLENGES FOR CHIEF RESILIENCE OFFICERS: MAINTAINING INTEREST FROM STAKEHOLDERS, ACCESSING DATA, FINANCING PROJECTS, AND GUARANTEEING THE SUSTAINABILITY OF THE RESILIENCE STRATEGY IN THE LONG TERM."

RESILIENCE BONDS: A BUSINESS-MODEL FOR RESILIENT INFRASTRUCTURE

By Shalini Vaijhala,
Founder and CEO of re:focus partners

and James Rhodes,
Senior Fellow of re:focus partners

Before starting re:focus partners, Shalini Vaijhala served as Special Representative in the Office of Administrator Lisa Jackson at the U.S. Environmental Protection Agency. In this position, she led the U.S.-Brazil Joint Initiative on Urban Sustainability (JIUS) announced in March 2011 by presidents Obama and Rousseff. Shalini received her Ph.D. in Engineering and Public Policy and B.Arch in Architecture from Carnegie Mellon University.

James (Jamie) Rhodes joined re:focus partners as a Senior Fellow in 2014 to co-lead the RE.bound Program and develop a new portfolio of insurance-linked finance projects. He is an entrepreneur who holds multiple patents and has founded and built several successful enterprises across diverse industry segments. Jamie earned a Ph.D. in Engineering and Public Policy from Carnegie Mellon University, and worked as a Post-Doctoral Researcher at Scripps Institution of Oceanography and then as a Staff Researcher at U.C. Davis.

KEYWORDS

- RESILIENCE BONDS
- CATASTROPHE BONDS
- BUSINESS MODEL

When natural disasters occur, governments are often considered as "insurers of last resort" and are expected to help with losses not covered by traditional insurance and to coordinate and fund reconstruction efforts. As the frequency and severity of natural disasters (storms, floods, wildfires) increase, this becomes financially unsustainable for budget-constrained governments. Catastrophe bonds are one mechanism designed to transfer these types of risks to the capital market. They work as an insurance policy in which the holder of the policy receives a pay-out when a disaster reaches a predetermined threshold. re:focus partners came up with the idea of Resilience Bonds to complement catastrophe bonds. Resilience Bonds create incentives for cities to invest in resilience so as to reduce the human and financial cost of catastrophes when they strike. Resilience Bonds are designed to fund risk reduction projects via a resilience rebate that turns avoided losses in to a revenue stream.

INTRODUCTION

As the frequency and intensity of extreme weather events increase due to climate change, local and national governments are increasingly expected to step up to cover the damages and pay for reconstruction. Often considered as "insurers of last resort" public authorities are more and more often being called upon as the first resort, and they need to find sustainable business models to fund resilience. Still, it remains difficult for a public authority to pay for something when the cost is high, the benefits are diffuse, and the probability of extreme losses is low. To find financial resources and transfer the risks of such catastrophic events to financial markets, cities and utilities are investigating new financial and insurance mechanisms such as Catastrophe Bonds and Resilience Bonds.

re:focus developed the mechanism of Resilience Bonds in 2015 with the ambition of building more integrated resilience solutions and innovative public-private partnerships for vulnerable communities. Based on the same financial modeling as Catastrophe Bonds, Resilience Bonds are designed to fund both proactive risk reduction projects and reactive disaster recovery actions.

1. THE MAIN ISSUE UNTIL NOW: FINANCING RESILIENCE IS NEITHER POLITICALLY NOR FINANCIALLY REWARDING

When a disaster strikes, communities generally expect governments to pay for the losses not covered by traditional insurance and to coordinate and fund reconstruction efforts. As the frequency and severity of natural disasters (storms, floods, wildfires) increase this becomes financially unbearable for budget-constrained governments. Even more so as the gap between insured losses and total losses is increasing. Between 2005 and 2015, the United Nations counted 335 climate related disasters every year, twice as many as between 1985 and 1994[1]. And the cost of each catastrophe grew six-fold from around $30 billion per year to $182 billon[2]. Moreover, in 2016, only 26% of economic losses due to natural disasters were insured[3].

In heavily urbanized areas of developed countries, additional challenges arise and increase the cost of each weather-related disaster. For example, older cities have to factor in aging infrastructure systems that are increasingly vulnerable and at risk of cascading failure. A storm can damage a power system and cut production for weeks, dramatically increasing the cost of an extreme event. In developing countries, municipalities are also struggling to keep up with informal urbanization and the extreme vulnerability of their inhabitants.

Planning ahead could dramatically reduce the cost of each extreme weather event. But cities are often budget constrained and faced with stretching limited funding to address many competing priorities. It is difficult to pay for something when up-front costs are high, benefits are diffuse and extend far into the future, and the probability of extreme losses is low. On top of that, success in well-designed resilient infrastructure is often invisible. In other words, success happens when nothing happens. While investing early in resilience saves lives and money, it is often neither politically nor financially rewarding. To create incentives for cities to invest in resilience, re:focus created Resilience Bonds to transform avoided losses into revenue flows, and to make invisible successes visible and economically capturable.

1 United Nations Office for Disaster Risk Reduction.

2 Swiss Re, *Closing the protection gap. Disaster smart solutions for the public sector*, 2016.

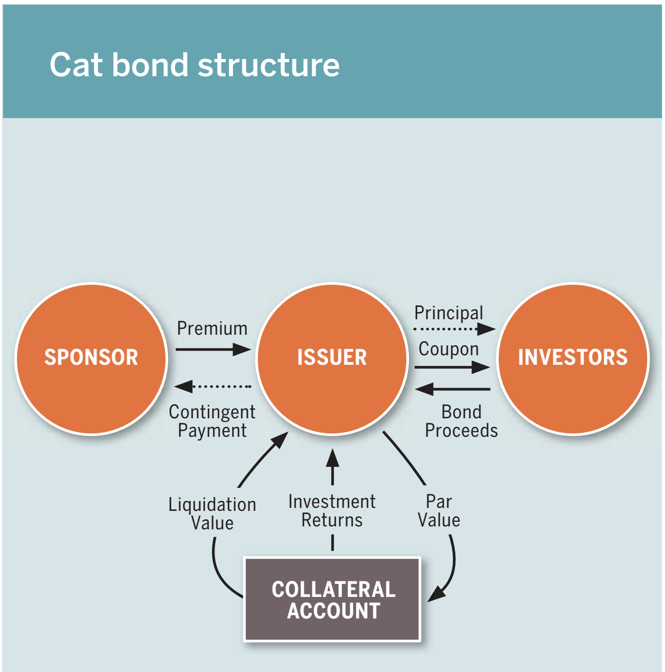
3 Aon, *Impact Forecasting. Annual global climate and catastrophe report*, 2017.

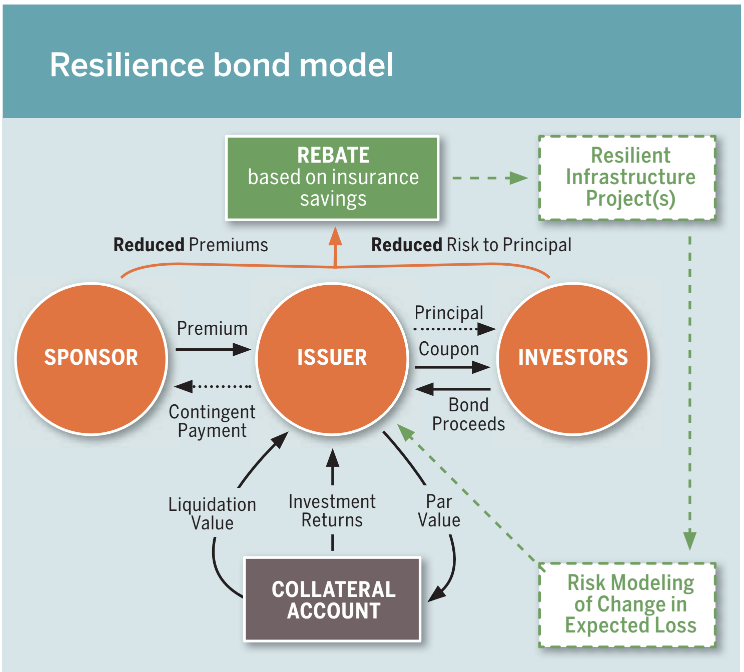
2. THE MODEL OF RESILIENCE BONDS: FUNDING BOTH PROACTIVE RISK REDUCTION AND REACTIVE RECOVERY ACTIONS

2.1. GENESIS OF CATASTROPHE BONDS: TRANSFERRING RISKS TO CAPITAL MARKETS

Catastrophe Bonds (also called Cat Bonds) emerged in the 1990s after Hurricane Andrew hit the State of Florida in the United States[4]. There was tremendous financial devastation because of the large real estate market and major tourism industry. The insurance industry came together to create an instrument to protect itself against extreme losses: Catastrophe Bonds. These instruments are insurance policies and *not* traditional municipal bonds that you use to build a road or a seawall. Each policy typically has a short term, between three and five years. What makes

4 Michael Lewis, *In Nature's Casino*, The New York Times, 2007.





"CAT BONDS ARE SIMILAR TO LIFE INSURANCE POLICIES THAT ONLY PAY OUT WHEN THE WORST DISASTERS STRIKE. RESILIENCE BONDS ARE MORE LIKE PROGRESSIVE HEALTH INSURANCE THAT PROVIDE INCENTIVES TO MAKE HEALTHY CHOICES THAT REDUCE LONG-TERM RISKS."

them unique is that when a disaster reaches a predetermined threshold, the holder of the policy receives a pay-out, the same way a life insurance holder would, and investors lose part or all of their principal invested. The purpose of Catastrophe Bonds (and Resilience Bonds) is to transfer risk to capital market. Nowadays the market for Cat Bonds is around $30 billion and growing rapidly.

2.2. THE DIFFERENCE BETWEEN CAT BONDS AND RESILIENCE BONDS

Resilience Bonds are a form of Catastrophe Bond that link insurance premiums to resilience projects in order to monetize avoided losses through a rebate structure. The "resilience rebate" is a source of funding for measurable risk reduction projects. If Catastrophe Bonds are similar to life insurance policies that only pay out when the worst disasters strike, then Resilience Bonds are more like progressive health insurance programs that provide incentives to make healthy choices—quitting smoking or exercising regularly—that reduce long-term risks and the cost of care.

The difference between a Resilience Bond and a Catastrophe Bond is that it uses the same financial modeling as in a Catastrophe Bond, but it models two scenarios: business-as-usual and a world with a protective infrastructure project. It estimates the difference in the expected losses when the catastrophe happens with and without the project. That difference is captured as a resilience rebate and this rebate can be used to fund the project itself.

There are two main advantages of a Resilience Bond.

(1) The first is that it expands financial protections for communities vulnerable to a catastrophic event. When the predefined threshold is hit, the sponsor receives a rapid payout, which makes post-disaster reaction quicker.

(2) The second advantage is to leverage new project finance for resilient infrastructure that offers a measurable risk reduction. Resilience bonds are therefore designed to fund proactive risk reduction projects and reactive disaster recovery actions.

The major innovation is that it initiates infrastructure projects with resilience in mind. It helps cities design new solutions instead of building more of the same, because resilience is about systems, not just one-off projects.

2.3. AN ECOSYSTEM OF MULTIPLE SPONSORS

The process of designing and issuing a Resilience Bond generally involves an ecosystem of players ranging from local and state government officials who are responsible for disaster prevention, to insurers who will pay for the losses, utility operators who are at risk, and the engineering and construction companies that can reduce risk as part of their businesses.

In most cases, a city government is rarely the largest asset-holder affected by a catastrophe. If you take the case of Norfolk, Virginia, the city does not hold most of the assets at risk, even though it has the ability to build comprehensive coastal protections and the responsibility to do so in specific areas. This is the reason why Resilience Bonds were designed to engage multiple sponsors[5], the same way you would have a cooperative or homeowners association in a building in order to have all the affected players in the scheme.

re:focus collaborates with many engineering and construction companies, which reduce risk as part of their business to offer a wide range of technical solutions to a given problem encountered in one place. In some cases, operating engineering firms are able to see more sides of a client's exposure to risk than a client itself, and these firms have the best vantage point to design comprehensive and cost-effective system solutions rather than one-off projects that are limited by a single agency or department's authority or budget.

2.4. A FINANCIAL TOOL FOR RESILIENCE PROJECTS

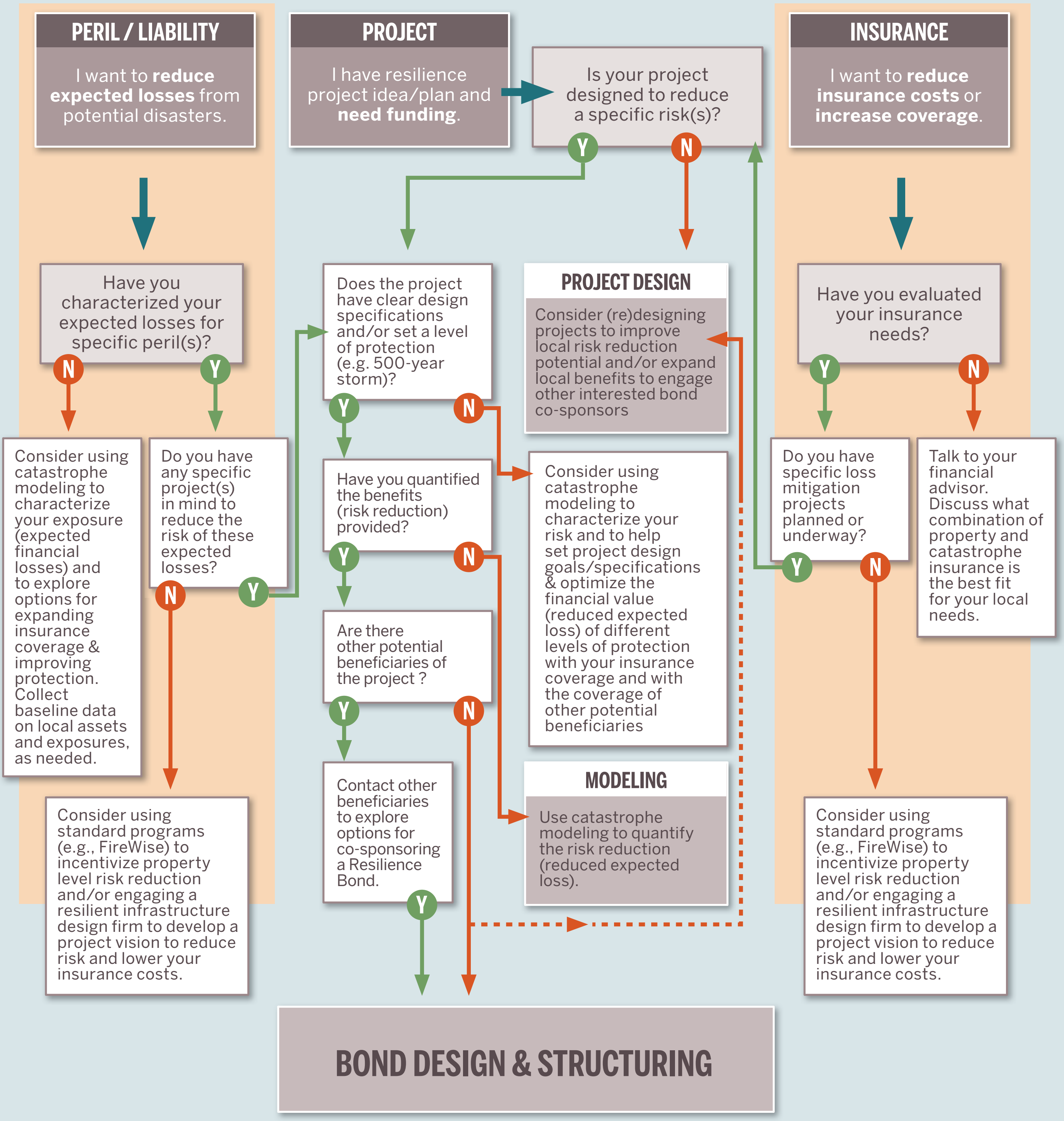
re:focus serves as an agent for loss mitigation, aligning risk reduction projects with insurance benefits on behalf of both public and private entities.

To serve the best interest of all of these entities, it is important to make very clear where Resilience Bonds can be appropriate and where they are not the right tool. Not all projects are a good fit for a Resilience Bond approach. Some projects are too difficult to model, and some are too small to create quantifiable or meaningful risk reductions. Some projects are too diffuse, such as capacity building programs or emergency preparedness plans, and some projects have high operational uncertainty which makes benefits hard to estimate. It is worth noting that Resilience Bonds are designed for catastrophic events not chronic stress like water scarcity. re:focus works with clients and partners on alternative insurance-linked project finance solutions for these other types of hazards as well.

Timing is also very important. Public entities often need technical assistance to go from where they are now to where they need to be to start a Resilience Bond project (cf. figure below). For example, if a city has a concept for coastal protection but does not know what level of protection it needs, it means that there is still preliminary design work that needs to be completed before exploring if and to what extent a Resilience Bond can help finance the project.

5 The sponsor is the one who pays the premium and receives the payout in the event of a disaster.

Bond design & structuring



Source: www.refocuspartners.com/rebound

3. ACHIEVEMENTS AND REMAINING CHALLENGES FOR RESILIENCE BONDS

3.1. ACHIEVEMENTS AND MAIN PROSPECTS FOR THE UPCOMING YEARS

re:focus released a framework for Resilience Bonds in December 2015. The mechanism has since been validated by multiple partners in the insurance industry and capital markets over the course of 2016 and 2017 to set the stage for the first wave of transactions. Since then, re:focus has been working with both private partners and public sector entities toward the first Resilience Bond issuance. The process of developing public-interest Resilience Bonds is slower than issuing a conventional Catastrophe Bond because it is necessary to align the timing of a Resilience Bond issuance with the timing of major infrastructure projects. A Resilience Bond is designed to be issued when a resilience project comes into effect. In the case of a seawall, it can be up to a decade from design going through construction. Public sector Resilience Bond projects will mainly be driven by project design timelines not insurance industry timelines.

So far, the priority has been large public infrastructure projects in North America, largely because this is where the Catastrophe Bond market has sparked the greatest interest. For example, the New York Subway System and Amtrak both issued their own Catastrophe Bonds after Hurricane Sandy in 2013. There is also a straightforward path between high value assets and major resilience projects in cities like San Francisco, Houston, and Miami.

Another line of work is being investigated in collaboration with major insurance players as part of the Center for Global Disaster Protection. This work focuses on extending the Resilience Bond model to developing countries. In these countries, when a disaster strikes damages are often more devastating to people and homes than large assets or commercial industries. As part of a collaboration with Risk Management Solutions (RMS) and Vivid Economics, DfID, and Lloyds of London through a new Innovation Lab[6], re:focus has been developing variations of Resilience Bonds that can better leverage humanitarian aid and international development funding for disaster risk reduction projects around the world.

Overall, both private and public actors are enthusiastic about the possibilities offered by Resilience Bonds. But public-sector projects are much harder to develop. Unlike private actors that can mitigate losses for their own covered assets, public sector projects are often far broader. Private actors have specific expectations; the asset owner is the one at risk, and the one able to implement the project and enjoy the benefits of the investments. Therefore, it is a much more contained conversation and resilience projects are easier to move forward. In the public sector, the conversation requires many more stakeholders, they move at a slower pace and the stakeholder with the authority to implement a large infrastructure project is not always the greatest beneficiary even though they are responsible for the process.

6 RMS, *Enter the Center*, 2018.

"NOT ALL PROJECTS ARE A GOOD FIT FOR A RESILIENCE BOND. SOME PROJECTS ARE TOO DIFFICULT TO MODEL, OTHERS ARE TOO SMALL OR DIFFUSE TO CREATE QUANTIFIABLE RISK REDUCTIONS."

3.2. REMAINING CHALLENGES AND THE NEXT FRONTIER

Designing major resilient infrastructure projects and systems is time-consuming and complex work. Making sure the design process generates meaningful and measurable risk reductions adds another layer of complexity. However, this is essential for avoided losses to be monetized. That can mean considering different technologies, construction methods, or other design solutions to increase the level of protection and create greater financial value. This is counterintuitive for most designers and engineers who are typically presented with a scope of work and/or budget at the outset of a project. They then work to design the best solution at the lowest cost.

The first challenge is engaging and collaborating with design and engineering firms that are willing to shift from this very narrow path to a more flexible and innovative approach. This allows both designers and clients to zoom out and identify where projects can be scaled up to capture greater financial value rather than downsized to match currently available funds. Most infrastructure projects are generally imagined based on what an agency can buy and not necessarily based on the desirable level of protection. Or ideas are too abstract. Enormous resilience solutions are envisioned, but without any practical path to implementation. A middle ground of a project pipeline of large scale and pragmatic risk reduction projects is essential for creating meaningful change.

The second element is to find the right point of intervention in a project design so that the financing can inform the design and the design can integrate the financing solution. Both in the private and public sectors, people who manage risk and insurance and understand how resilience projects could be translated into financial rebates are not the same as the staff who do capital planning for infrastructure or project implementation. This lack of communication or a common language or approach means that project opportunities to reduce risk are sometimes missed altogether. Risk managers need to understand how projects in their city or utility's capital and strategic plans can reduce overall system risk and project-level people need to understand the potential insurance benefits (and funding sources) created by their project. To put it differently, if your life insurance company does not know that you quit smoking, you will not see a change in your rates. Sometimes it is difficult to reach that alignment. Framing the discussion to engage departments with complementary priorities can also help build broader support with communities and local stakeholders so that they also understand the benefits from such projects.

Finally, our next frontier is to meaningfully model risk reduction and price the value of these reductions for a wider variety of infrastructure project types and perils. Resilience Bonds work very well for some projects and not for others. For example, modeling the risk reduction from a coastal protection project is very straightforward, but doing the same for a city-wide green stormwater infrastructure system is not. The real value of our work will be in extending models to more diffuse resilience projects and capturing benefits that are harder to model and spread across more beneficiaries over time. This is the case of housing reconstruction in Nepal after recent earthquakes or in the Caribbean following Hurricanes Irma and Maria. There are dramatic socio-economic consequences of disasters and great interest in resilient reconstruction, but a lot of challenges remain in aligning cost and benefits between international development project funding agencies and the insurance industry.

CONCLUSION

Resilience Bonds have been designed with the conviction that planning ahead of catastrophes is more cost-effective than post-disaster reconstruction. Resilience Bonds are designed to monetize avoided losses to help governments invest in proactive risk reduction infrastructure projects. The potential for local governments to fund resilience projects, to share the burden with other stakeholders and to transfer the risk of a catastrophe to capital markets using this mechanism are significant. While today Resilience Bonds only work for some projects where risk reductions are readily measurable and targeted, the ultimate objective is to extend the types of projects for which Resilience Bonds can work and serve a broader range of vulnerable communities around the world.

FROM RESILIENT CITIES TO RESILIENT CITIZENS: the use of Facebook groups during disasters

by Deepti Doshi and Nicole Schneidman,
Community partnerships at Facebook

As the head of the Community Partnerships team at Facebook, Deepti's team is responsible for building products, programs, and partnerships that support community leaders globally. She has been working across the disciplines of social change, community organizing and leadership development as a social entrepreneur across the private, non – profit and public sectors. She created and ran Haiyya, India's largest community organizing platform, Escuela Nueva India, an education company that serves the urban poor and the Fellows Program at Acumen Fund to build leaders for the social enterprise sector. Nicole Schneidman is a Strategic Partner Manager at Facebook where her work focuses on supporting community leaders around the world. Prior to that, she was Strategic Initiatives Manager at Citizen Effect, a crowdfunding platform dedicated to financing critical community projects.

KEYWORDS

- SOCIAL MEDIA
- CITIZEN ENGAGEMENT
- HURRICANE
- RESCUE
- SAFETY

Today, there are tens of millions of Facebook groups and over 200 million Facebook users all over the world who are members of Facebook groups that they consider to be a meaningful part of their lives. These groups cover a range of topics from parenting to rare diseases to fitness, but they all enable people to build relationships with the communities that matter to them, no matter where they are. Over 7 million of the Facebook groups that users have identified as meaningful are local groups that are bringing together the people and places that make up local communities, whether that be a neighborhood, a city, or a region. The connections and information these groups foster among local communities has meant that when crisis strikes, local groups have proven themselves to be critical sources of support and assistance for their members. Lack of resources and recognition are the main challenges faced by these groups, which are entirely based on civic engagement and the personal commitment of their leaders. To overcome these limits, Facebook launched in 2018 the Facebook Community Leadership Program to empower community leaders from all over the world.

INTRODUCTION

With almost half of American users getting news from Facebook[1]*, the social network now ranks as one of the most popular sources for accessing information. It is an active destination for those wishing to discuss and find information about current events. However, Facebook has recognized that the value and opportunity presented by its platform of 2 billion users worldwide surpasses information sharing. In the summer of 2017, Mark Zuckerberg announced a new mission statement for Facebook –* "Give people the power to build community and bring the world closer together." *This announcement marked an important milestone for the company and a public commitment to taking Facebook beyond information sharing and connecting people with their friends and family to becoming a platform for ensuring every Facebook user is a member of a meaningful community.*

1 Pew Research Center, *The Evolving Role of News on Twitter and Facebook*, 2015

With this announcement has come exciting opportunities for Facebook to expand upon the tools that users have long used to find and foster community. One of the primary vehicles for users to build community on Facebook is Facebook groups. Today, Facebook groups are used worldwide to connect people around their common interests or issues ranging from rare diseases to favorite TV shows.

Facebook groups are not necessarily connecting people far and wide, but instead many are bringing people closer together with the neighbors, businesses, and organizations around them. These "local groups" are the online mirror of their offline communities and are proving to be a tool for local communities to connect, communicate, and organize. In the face of a crisis or challenge, local groups and the local residents who manage them are catalysts for community action – a grassroots platform over which residents can crowdsource information and offer one another support in real-time.

With over 2.23 billion monthly active Facebook users[2] all over the world, Facebook has an unprecedented ability to reach and connect people. As a result, Facebook has a critical opportunity and unique role to play in supporting communities in preventing, managing, and recovering from crises. Local Facebook groups have already proven their ability to support communities in dealing with natural disasters and safety issues. As the number of these local groups continues to grow, they represent an important building block in fostering local communities' resilience around the world.

However, the communities being created and fostered through Facebook groups are not the result of the technology platform alone. For each meaningful Facebook group, there is a community leader who is working tirelessly to ensure the group remains a safe, supportive space for its members. Currently, the majority of these leaders are doing this work on a voluntary basis, even when the work of managing the group requires more than 20 hours per week. Recognizing that behind every meaningful community there is at least one dedicated community leader, Facebook has launched the Facebook Community Leader Program to ensure the people who are building community on Facebook using groups and other tools are supported and celebrated.

2 Facebook, Q2 2018

1. BUILDING RESILIENCE THROUGH FACEBOOK GROUPS

As of 2018, Facebook estimated there were over 200 million Facebook users who were part of "*meaningful groups*" on the platform – groups whose members consider that group to add meaningful value to their lives. Over 7 million of these meaningful groups are local groups whose members are geographically clustered within a 50 km radius.

In times of crises large and small, local communities have used their local groups to communicate, console, and survive. Some groups such as the Houston Flood 2015 & Beyond: Support and Resource Group have developed specialized expertise to guide their community through recurring natural disasters like hurricanes, including providing up-to-date weather updates, collecting donations, cleaning out damaged homes, and filing flood insurance claims. Other local groups like France's Wanted groups have offered solace and shelter when members haven't been able to access their homes. In other cases, local groups serve as an online neighborhood watch, exemplified by Stolen Stuff Hawaii, a group which keeps residents of Hawaii continually up to date regarding local crime and safety issues.

The nature and characteristics of the groups which support local communities through crises vary but they can be categorized using three criteria: their typology, activities and governance.

- **Typology of the group**: groups that support communities through crises are either created prior to or during a crisis. In the case of groups that predate a crisis, these groups are generally created by a local resident to connect her community on an ongoing basis to share local news, events, and recommendations. When a crisis strikes, these groups become a trusted source of information and organization. In contrast, groups that are created during a crisis are created with the exclusive purpose of supporting a community through a specific crisis. These groups generally only last for

"AS OF 2018, FACEBOOK ESTIMATED THERE WERE OVER 200 MILLION FACEBOOK USERS WHO WERE PART OF 'MEANINGFUL GROUPS,' WHOSE MEMBERS CONSIDER THAT GROUP TO ADD MEANINGFUL VALUE TO THEIR LIVES."

the duration of the crisis and its subsequent recovery period, but in the case of communities that face recurring natural disasters (such as hurricanes), these groups can last for longer periods.

- **Activities of the group:** activities in local groups supporting a community through crisis can range from information sharing ("The intersection at Central and Smith Street is closed") to confirmation of a member's safety ("I'm checking in to verify I'm safe and in a secure place) to requests for help ("my grandmother and I need help") to donations to the community ("I can give food, clothes, etc."). These activities are not mutually exclusive and in many groups, these four activities occur simultaneously.

- **Governance of the group:** the majority of local groups are run by one or more local residents who voluntarily start the group to support their community and in so doing, become community leaders. In less frequent cases, local nonprofits or government officials create and manage a local group. However, a group's governance is not in itself an indicator of whether or not local nonprofits or government are involved in a group. It is very common for local nonprofits, government officials, and even local businesses to be members of local groups that are run by local residents.

Regardless of which of these criteria apply to a local group, the purpose that all local groups share to support communities around the world in crisis is clearly aligned with Facebook's priorities as a company and community. In Facebook's 2017 "Building Global Community" Manifesto[3], Mark Zuckerberg emphasized, "*the most important thing we at Facebook can do is develop the social infrastructure to give people the power to build a global community that works for all of us.*" Looking forward, Facebook's objective is to help users build "safe," "informed," "civically-engaged" and "inclusive" communities all over the world. Given how users have already demonstrated local groups' capacity for supporting communities through crisis and Facebook's vision for the future, Facebook groups and local groups in particular are well positioned to become an important tool to help communities become more resilient .

"LOOKING FORWARD, FACEBOOK'S OBJECTIVE IS TO HELP USERS BUILD 'SAFE,' 'INFORMED,' 'CIVICALLY-ENGAGED' AND 'INCLUSIVE' COMMUNITIES ALL OVER THE WORLD."

3 Mark Zuckeberg, "Building Global Community,", February 2017

2. TWO EXAMPLES OF LOCAL GROUPS BUILDING RESILIENCE IN U.S. COMMUNITIES: SIENNA PLANTATION NEIGHBORS AND STOLEN STUFF HAWAII

Two local Facebook groups, Sienna Plantation Neighbors and Stolen Stuff Hawaii, offer compelling examples of how local community leaders have used Facebook groups as a tool to harness local resources to support their communities' resilience.

2.1. SIENNA PLANTATION NEIGHBORS

Sienna Plantation Neighbors is a local Facebook group that was established in 2015 by Teri Zee Clayton. Teri created the group with the purpose of more closely connecting the residents of Sienna Plantation, a master-planned community in Missouri City outside of Houston, Texas. Teri's vision for the group was to *"help my neighbors connect and share information relevant to our community"*. Today, the group serves as the primary communication platform for the 24,000 residents of Sienna Plantation and approximately one out of every three residents of Sienna Plantation is a member of the group. Teri Zee Clayton and two moderators oversee the management of the group to ensure the group remains a safe, positive space for the community. Posts relative to shaming, political and religious topics are forbidden and advertising is strictly limited.

In 2017 when Hurricane Harvey struck Houston and the surrounding area including Sienna Plantation, Sienna Plantation Neighbors acted as the primary communication and disaster management platform for Teri's community. Hurricane Harvey was a record-breaking hurricane for the Houston area. In the midst of the storm, Sienna Plantation's residents were faced with unprecedented rainfall and violent winds, which triggered severe flooding. The vast majority of the region's communication and energy infrastructure was affected, leaving hundreds of residents trapped without access to electricity. Emergency call centers and first responders were overwhelmed by the scale of the destruction and unable to respond to the number of calls for help. In addition, the area that the hurricane had affected was so large that Sienna Plantation residents struggled to get access to information specific to their community.

"ANNOUNCED IN FEBRUARY 2018, THE FACEBOOK COMMUNITY LEADERSHIP PROGRAM IS A GLOBAL INITIATIVE TO SUPPORT PEOPLE BUILDING COMMUNITIES ON FACEBOOK WITH A GRANT-PROGRAM OF $10 MILLION."

In the midst of this crisis, the residents of Sienna Plantation relied on the Sienna Plantation Neighbors group. Where emergency centers were limited by their number of phone lines and operators available, the Sienna Plantation Neighbors group didn't face similar capacity constraints. Members were free to post a message with a request for help or rescue without it having to be fielded or approved. As a result, members were able to post timely, personal updates and responses to keep one another informed and supported throughout the storm.

The flow of information that Sienna Plantation Neighbors offered ensured residents were kept informed on one another's status and when needed, could even take the step of coordinating improvised rescue teams. According to Teri, "*members could easily share their location and the gravity of their situation using the group and spontaneous rescuers could then efficiently organize a response. Rides were coordinated to take people rescued from flooded areas to dry land drop-offs. People in need of a shelter were matched with neighbors with an available space. People also formed citizen patrols to keep the community safe due to the looters coming in, knowing most homes were evacuated. Donations were taken for cleaning supplies and other equipment. And as businesses near the community reopened, people posted updates on hours, locations, stock levels and length of lines.*" Sienna Plantation Neighbors became a lifeline for the community, which Teri and her team estimate likely saved many lives. The efficiency and impact of Sienna Plantation Neighbors during Hurricane Harvey led to hundreds of residents joining the group during the disaster who continue to use the group as a local resource to this day.

2.2. STOLEN STUFF HAWAII

Stolen Stuff Hawaii is a community-watch group open to all residents of the state of Hawaii. Currently, Stolen Stuff Hawaii has over 120,000 members, around 10% of Hawaii's population, and is the largest anti-theft and anti-crime group in Hawaii. Stolen Stuff Hawaii's community is very active with an average of 30 posts per day. Members of the group assist each other to prevent thefts and crimes and assist victims of theft. Only posts relative to lost and found items and pets, missing persons, personal security, law enforcement, scams, on-topic humor and current events are allowed.

Stolen Stuff Hawaii was founded in 2014 by Michael Kitchens, a retired sergeant from the US Air Force. Mike says that he "*started the group in reaction to the theft of my brother-in-law's vehicle. At that time, I believed that a grassroot movement involving all state citizens could significantly complement the work achieved by police forces to recover stolen items and fight crime.*" As the topic of crime is sensitive, the rules of the group strictly prohibit victim shaming, the promotion of violence, paybacks and compensations, and any religious and political allusions. All posts related to a theft published on the group require a police report and are otherwise deleted.

Stolen Stuff Hawaii in no way aims to substitute the important work of law enforcement, namely the Honolulu Police Department. Instead, Mike hopes the group enriches the interactions between the police force and local citizens to improve Hawaii's resilience against theft. Participation by the police force in the group is welcome and encouraged. The Honolulu Police Department has publicly underscored the added value derived from Stolen Stuff Hawaii, resulting in Mike being nominated for a Citizen's Award from Honolulu Police Department and recognized by the City & County of Honolulu for Outstanding Community Service. Policemen use the group to monitor theft activity and interact with citizens. The group also raises awareness among citizens on safety issues and prevention through online tutorials about preventing vehicle theft, abandoned vehicles, holiday crime prevention tips and dealing with phone scams. In the future, Mike hopes Stolen Stuff Hawaii's members can work together to advocate for legislative change related to crime and safety issues in their state.

Beyond crime and safety, Stolen Stuff Hawaii has also served as a collaborative platform to raise community awareness related to other important local issues. For example, during Hurricane Lane, the group provided different topical threads for residents to remain informed and support each other. Specifically, the group launched and moderated three threads specific to the hurricane: a thread with the most up-to-date information, a thread dedicated to give advice on finding supplies, and a funny thread for people to share more humor amidst the fear surrounding the storm.

Over time, this local group has evolved to become a public service, disseminating information, bringing citizens together and training them to face challenges in their community. Today, Stolen Stuff Hawaii is moderated by a team of 18 volunteers. For Mike, since the group is now serving a public education role, "*it is very important that the group avoids monetization because making money off the misery of others is what will divide us. Anything generated from the group goes back into the group. This helps keep us together and makes us stronger.*"

3. THE FACEBOOK COMMUNITY LEADERSHIP PROGRAM: EMPOWERING COMMUNITY LEADERS TO BUILD RESILIENCE IN THE LONG TERM

Every task, operation or organization that relies on grassroots civic engagement encounters challenges and limitations. In the case of Facebook groups, these limitations take the form of the limited resources and recognition that the community leaders behind groups receive for their efforts managing these communities. In the majority of cases, the community leaders managing Facebook groups are doing so on a voluntary basis and receive no funding or outside support. While very often members perceive the value of their groups, they may not realize how much time and effort it takes from the community leaders behind the groups.

To address these challenges and empower the community leaders who are managing groups and other communities on the platform, Facebook recently launched the Facebook Community Leadership Program. Announced in February 2018, the Facebook Community Leadership Program is a global initiative to support people building communities on Facebook with a grant-program of $10 million. For the first year of the program, Facebook received over 6,000 applications from all over the world. In total, 115 people managing communities from 46 different countries have been selected for the program and will benefit from the following: an educational curriculum focused on leadership development, strategic community engagement and technical skills; funding to support their offline community building activities; and a network of professional support. Out of the 115 participants, 23 community leaders are managing groups focused on community resilience[4]. Five of the 115 participants were chosen as "community leaders in residence" and have been awarded a up to $1 million in grants. The final amount received by each grantee will be based on a budget proposal they will work on as part of their training program. France's Wanted Community, a network of local groups led by Christian Delachet that offer support and mutual assistance to neighbors online and offline, is among these grantees.

4 Other selected community leaders are managing groups dealing with civic engagement (15), with health (15), parenting (15) and education (13). Remaining ones deal with a wide range of topics such as agriculture, common ground, LGBT, etc.

In the context of local groups, it is worth considering other potential sources of support for the community leaders who are organizing and empowering the people around them. One possibility is to consider the role local governments could play to help sustain active local groups that are working in the public interest, while maintaining these groups as a space for citizen-driven conversation and action. In the context of both crisis and resilience in response to a crisis, Facebook groups could play a significant role in how government and local citizens connect. Groups are very loose networks allowing information to flow quickly, which is very different from the traditional systems relied upon when crisis strikes. In the midst of a catastrophic event, people on Facebook groups can engage instantaneously to share the latest information. This could be valuable to public authorities who could benefit from crowdsourced information allowing them to understand the crisis before and prioritize where their services are needed.

Given this potential for local groups to support the bonds among local communities, especially in the context of a crisis, the question is the following: are there any incentive mechanisms that could be offered by local governments to support community leaders who spend 20 to 60 hours per week managing groups fulfilling a role that is supporting the public interest? Beyond local government, private organizations could also play a critical role in supporting community leaders. An example of a private company working with those groups to promote their impact is CNN "Everybody Heroes," which broadcasted the story of Umra Omar's group Safari Doctor, which brings free healthcare to people living in remote areas of Kenya. For the work of the community leaders behind online communities like Facebook groups to be sustainable, it is critical for public and private entities alike to acknowledge the positive role played by these groups and support the work of their leaders.

CONCLUSION

Facebook groups and local Facebook groups specifically are proving to be important tools to unite and empower communities around the world. Local groups run by community leaders like Terri Zee Clayton and Michael Kitchens epitomize the safe, informed, civically-engaged and inclusive communities that Facebook has committed to enabling. In times of crisis, local groups like Sienna Plantation Neighbors and Stolen Stuff Hawaii have demonstrated their ability to serve simultaneously as a real-time communication and disaster response platform. In the hands of leaders like Teri and Michael, these groups have become critical building blocks for fostering communities' resilience. Given what the combination of these volunteer community leaders and local groups has already accomplished, this pairing has clear potential for building stronger ties between local communities and local governments and bolstering communities' civic engagement. However, in order to achieve the potential of local groups in these and other regards, it is critical for the community leaders behind them to receive the recognition and support they need to continue their high-impact efforts.

STRENGTHENING SOCIAL TIES IN VULNERABLE CITIES

By Jean-Christophe Levassor,
Director of La Condition Publique

La Condition Publique - ©Julien Pitinome

Jean-Christophe Levassor is director of La Condition Publique, a cultural center in the Le Pile neighborhood of Roubaix, a large town in northern France located on the border with Belgium. He started his career at the Chaillot-Théâtre National in Paris before being appointed administrator of the Centre Dramatique National in Nancy. In 2008, he joined the French Ministry of Culture as head of the public service broadcasting bureau. Two years later he returned to a more locally based focus with his appointment as head of culture for the Lille metropolitan authority. In 2016 he was appointed to head La Condition Publique.

KEYWORDS

- INDUSTRIAL AND ECONOMIC CRISIS
- SOCIAL TIES
- CULTURE

Le Pile in east Roubaix has been particularly hard-hit by the industrial and financial crisis. Over 40% of the neighborhood's residents live under the poverty line (€642 a month for a person living alone). Social divisions are clear to see and recreating spaces where people can interact and make contact with each other is a key challenge in building resilience for the future. These social divisions will become worse without a proactive policy to combat them, and may be further exacerbated by the digital revolution. If nothing is done to restore harmonious co-existence in the community, positive initiatives such as urban farming and zero waste will never have an effect beyond a limited circle of insiders.

Located in this deprived neighborhood, La Condition Publique is a creative laboratory at the crossroad between art, culture and the imperatives of urban renewal and sustainability. Its aim is to recreate ties and spaces between different actors across the territory – residents, nonprofits, businesses, etc. – to support urban renovation and foster resilience.

INTRODUCTION

For many years Roubaix has been forced to deal with the devastating fallout of rapid deindustrialization across the region combined with the effects of the economic crisis. Rates of unemployment and poverty spiked sharply and, despite considerable efforts, the town has been unable to fully shake off the effects of the violent economic upheaval.

Some neighborhoods were particularly hard-hit, and Le Pile in particular remains very badly affected. In 2011, median taxable household income in Roubaix was €9,641, compared to €17,985 for the metropolitan authority area as a whole. The crisis caused by deindustrialization undermined social ties and harmonious co-existence in the community.

One of the key challenges is to find new ways to renovate and improve resilience in places like this. This is what La Condition Publique hopes to achieve in Le Pile, taking a fresh and innovative approach that brings economic, social and cultural projects together under one roof. La Condition Publique exists above all to revive ties between local people by providing a space that combines exhibitions, workspaces, community spaces and social experiments.

1. LA CONDITION PUBLIQUE: A SOCIAL INNOVATION LABORATORY FOR REBUILDING SOCIAL TIES

LE PILE: A NEIGHBORHOOD RAVAGED BY DEINDUSTRIALIZATION AND THE ECONOMIC CRISIS

Le Pile is a neighborhood in the east of Roubaix whose blue-collar architectural heritage is a legacy of the region's textile industry. Le Pile felt the full impact of the crisis, symbolized by the closure of the dye works and the former La Condition Publique, originally a textile storage and packing facility. The industrial crisis plunged the town and Le Pile into a critical economic and social situation. Housing in the district deteriorated while many of its inhabitants live in poverty and even extreme poverty.

In this context, urban renovation policies are particularly difficult to implement. For example, the moribund housing market means that renovations to the area's degraded housing stock, initiated by the publicly owned local development corporation, cost significantly more than the market value of the houses in question.

However, Le Pile can rely on its young population (50% of Le Pile's inhabitants are less than 30 years old) and its large ecosystem of non-profit organizations. Against this background, La Condition Publique aims to revitalize the neighborhood and recreate social ties by providing a space for the community, exhibitions and work, and playing a part in re-imagining public policies for urban renovation and resilience.

GENESIS OF A UNIQUE SPACE IN ROUBAIX

Located in a building that symbolizes the legacy of the textile industry, La Condition Publique is a cultural center that opened as part of the lille2004 program, celebrating Lille's role as the 2004 European Capital of Culture.

First impressions are that the site has a number of drawbacks: it is huge and therefore difficult to redevelop, its budget is far smaller than the norm for an organization of its type, and it is geographically distant from the town center where most arts activities are clustered.

Danser Danser ! by Bon Esprit- ©La Condition Publique

"THE AIM IS TO REVITALIZE THE NEIGHBORHOOD AND RECREATE SOCIAL TIES, PLAYING A PART IN RE-IMAGINING PUBLIC POLICIES FOR URBAN RENOVATION AND RESILIENCE."

The venue received a new lease on life in 2016, backed by a clear and powerful ambition: turn La Condition Publique into an interface between economic development policies and cultural policies. One of the biggest hurdles was getting people from the arts and business sectors to work together on common projects, given that they generally have very different outlooks, timescales and ways of working. We felt it was important to have a space where possibilities of working together, and the desire to do so, could coalesce around issues of urban renewal and social and environmental innovation. These issues have formed the subject of joint projects.

A SPACE FOR WORKING, EXHIBITING AND THE COMMUNITY

La Condition Publique has therefore become a creative laboratory at the intersection between art, culture and issues of urban renewal and sustainability. The center actively seeks to promote hybridization of models and to consolidate a cross-disciplinary approach by fostering cooperation between stakeholders.

Our work at La Condition Publique centers on three main fields:

- **a space for exhibitions and performance** divided into two seasons each with a showpiece exhibition (see Habitarium, below) and an entertainment event every weekend;
- **a space for social innovation and creation** focused on the cultural economy. Aiming to create the conditions for shared projects to emerge, La Condition Publique provides artists' studios, co-working spaces and a fablab with shared tools. Thus, it acts as an incubator for people with projects in arts, design and social innovation. This helps to create an ecosystem of actors engaged with social innovation in fields such as food, housing and social citizenship;
- **a heritage community space open to all**. La Condition Publique also hosts a farmers' market, cookery workshops and guided tours of historical sites. We encourage people to visit the site as this in turn promotes encounters.

In 2017, La Condition Publique welcomed 140,000 visitors, up from 80,000 in 2015. Its growth is therefore fast.

BRINGING PEOPLE TOGETHER AROUND A SHARED THEME: THE HABITARIUM EXHIBITION

Habitarium -29 March 2018 - ©Maxime Dufour

For its spring 2018 Habitarium exhibition, La Condition Publique worked with a number of partners active in urban planning and housing, including Réseau Alliances, Fondation Abbé Pierre, Fabrique des Quartiers (publicly owned local development corporation), architects and designers, to form a multi-disciplinary committee in charge of creating an exhibition that established a dialog between their different projects and visions. The exhibition featured largescale works alongside designers' projects, large pieces for kids to play with and even rooftop camping courtesy of a nonprofit called Yes We Camp.

As part of its outreach work for the exhibition, La Condition Publique initiated a project that saw journalism students and local young people work together to produce photo and video content on the theme of housing. The results were also exhibited. This exhibition perfectly encapsulates La Condition Publique's aims and working method. It is all about bringing together, within the same physical space, the results of theoretical and practical work undertaken by the full set of urban stakeholders, working together on topics that involve them all and giving them an opportunity to talk to each other, which is often lacking.

"ONE OF THE BIGGEST HURDLES WAS GETTING PEOPLE FROM THE ARTS AND BUSINESS SECTORS TO WORK TOGETHER GIVEN THAT THEY HAVE VERY DIFFERENT OUTLOOKS, TIMESCALES AND WAYS OF WORKING."

La Condition Publique also runs a series of broad-based food projects, focused on three topics:

- **putting consumers in touch with local producers** thanks to the farmers' market, something that was missing in the neighborhood because local shops have closed;
- **educating people about food quality** through workshops for parents and children and a participatory festival where children cook and are taught about choosing ingredients;
- **encouraging locals to get involved** so that they take ownership of the issues, thanks to an educational garden on the rooftop and interventions by artists.

CONTRIBUTING TO LOCAL POLICIES

La Condition Publique collaborates with other public bodies to participate in the wider economic and social development of the region. For example, as part of a major redevelopment project, Fabrique du Quartier was obliged to demolish some dilapidated houses. Programs like this usually take time to complete and houses are often boarded up, which is detrimental to the general atmosphere in a neighborhood. So the decision was taken to turn the site into a temporary city vegetable garden as a way of encouraging local people to become involved in the redevelopment process. La Condition Publique collaborated with Fabrique du Quartier to involve designers, who helped create the Jardin du Bonheur (Happiness Garden). Later, when we held an exhibition of street art, we staged it to run through the garden as a way of honoring the work that locals had put in.

In a similar vein, we asked Fabrique du Quartier to make a house available to an artist prior to demolition so that it could be used to create a largescale artwork. This allowed local residents to view their neighborhood in a new way, with a sense of pride replacing the unsettled anxiety more usually encountered.

Although our actions are very locally focused, we know that that alone is not enough to reach our target audience. We have to develop a national reputation if we are to encourage local people to take more of an interest in what we do, because at the local level La Condition Publique remains relatively unknown. The street art exhibition attracted big names and national media coverage, with 50,000 visitors coming to see it. It was a springboard that made many locals aware of La Condition Publique for the first time.

La rue couverte - ©La Condition Publique

Visit by President Emmanuel Macron - 13 November 2017 - ©La Condition Publique

2. OUTLOOK AND CHALLENGES FOR RAMPING UP THE IMPACT OF LA CONDITION PUBLIQUE

FINANCIAL CHALLENGE

Finance is the biggest hurdle. La Condition Publique currently operates with a budget of €3 million. This comes from three main sources: public funding for running costs, subsidies for specific projects and, to a lesser extent, income from our activities (co-productions, ticket sales, bar, etc.) The current change in public subsidy policy, from subsidizing running costs to a project-by-project model, poses a real difficulty for La Condition Publique because we have very significant running costs that are generally not covered by project subsidies.

However, one of the strengths of La Condition Publique is its ability to find funding from unconventional sources, not just the usual arts funders, thanks to the wider social and environmental contributions it makes. For example, the "(Se)cultiver program" won a national food award from the Ministry of Agriculture.

EMBEDDING OUR CENTER IN THE NEIGHBORHOOD AND LOCAL MOBILIZATION

Raising awareness among local people remains a real challenge because they are all too often convinced that this is not a venue for them. Social media is undeniably an effective tool, but it always talks to the same people. If we are to convince local people that La Condition Publique is also a community space for them, we need to develop a highly proactive approach to reaching out to them, making sure that we know how to build projects with local nonprofit organizations. This is why the staff at La Condition Publique all understand the importance of local outreach to convince people to visit the place and make it their own.

UNDERSTANDING HOW TO CONSTRUCT INITIATIVES WITH THE PRIVATE SECTOR

It is necessary to increase the number of partnerships with businesses. This process starts by making the work we do at La Condition Publique more accessible to economic players across the region. It is vital that we gain a better insight into their situations and become involved in co-developing experiments. Our community fablab, for example, is supported by Orange and Leroy Merlin which is involved in DIY project. Aside from traditional sponsorship, we have for example been working with Sergic, a housing manager, on a program of artists in residence in large housing blocks as a way to reinvent social ties in these spaces.

CONCLUSION

Le Pile, a neighborhood particularly hard-hit by the crisis in the textile industry, was for years caught in a downward spiral of economic decline and rising social difficulties. In order to halt this decline and create the conditions for greater future resilience, La Condition Publique creates connections between economic development policies and cultural policies. The organization seeks to rebuild social ties around a space for the community, for work and exhibitions by bringing together businesses, nonprofit organizations, artists and residents to work on issues of concern to all. La Condition Publique proactively engages with local people to change the way they look on their surroundings and make them stakeholders in revitalizing their neighborhood.

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"However much effort we put into anticipation, the unimaginable will always find ways into our lives. For our cities, it is no longer a matter of predicting the unpredictable, but of preparing to face it – which means becoming resilient."

Nicolas Renard,
Director of Foresight, Veolia Institute

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