

A COMPREHENSIVE STRATEGY OF RESILIENCE:

Veolia and Swiss Re partnership in New Orleans

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ARTICLE FOLLOWED BY AN INTERVIEW WITH
IVO MENZINGER FROM SWISS RE



New Orleans - @Veolia / Christophe Majani d'Inguibert

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.

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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

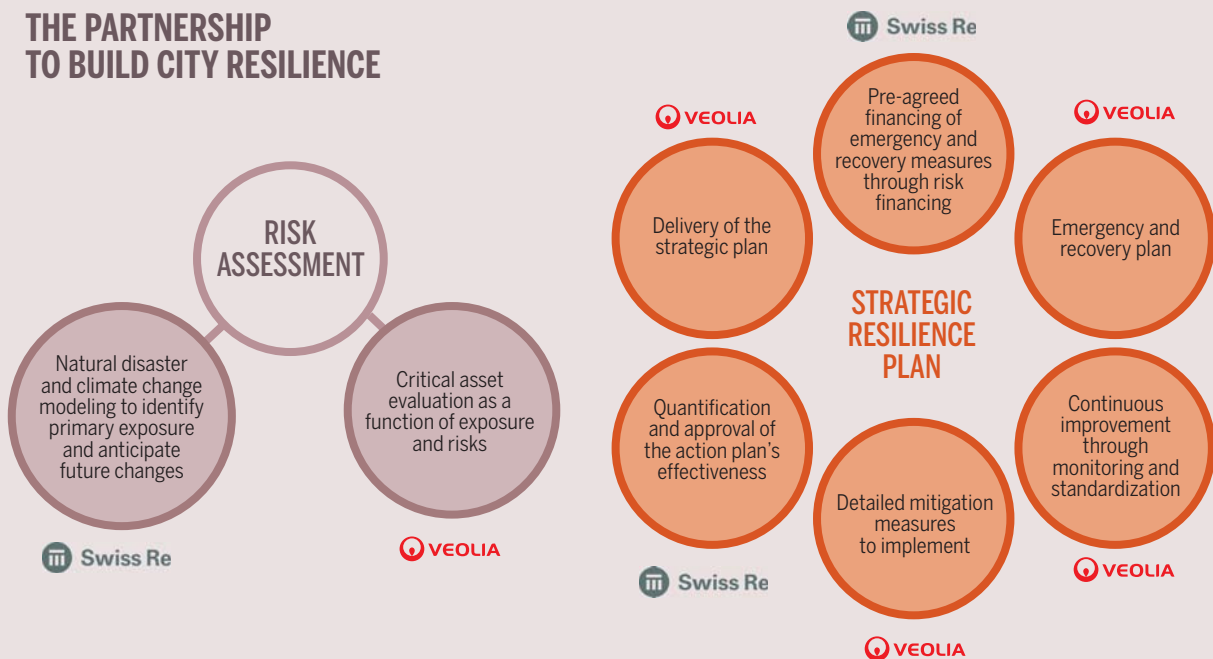
Thirty experts from both companies conducted various audits over an eight-month period from April to December 2016. Veolia compiled a complete detailed inventory of the territory’s 200 water infrastructure assets, worth an estimated \$1.7 billion. The role of this team of experts was to identify and 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

THE PARTNERSHIP TO BUILD CITY RESILIENCE



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."