

# The Resilient Year: 7 Trends To Watch In 2016

Given the condition of our environment this year and beyond, it's possible that no other issue will be as critical in 2016 as planning for and protecting against catastrophic events. These seven emerging trends forecast how the water industry will cope.

By John Batten

**A**s floods, drought, and other natural disasters unfold globally, resilience continues to top the world's headlines. The major change coming in 2016 will be the concept that resilience should shape public attitudes, policy, investment priorities, projects, and the status of water utilities as drivers for change. The year 2016 will be about how well cities and water utilities can become more resilient to disruptive events, from intense storms and drought to funding shortfalls and service demands.

## A Climate Of Change

Trends in resilience continue to emerge in cities across the U.S., so it's there that you find trends in action. Cities large and small seek to create an environment where people and businesses can thrive, yet they are also vulnerable to budget pressures, resource constraints, and natural disasters. Against these headwinds, the task of delivering safe and reliable water while protecting citizens from pollutants, disease, and flooding takes both strength of will and flexibility to adapt.

Fortunately, resilience solutions are trending along with these challenges and reflect new and exciting ideas. A global spirit of collaboration and sharing has produced a rich body of ideas and best practices that cities are making their own. Just as each city is dealt a different set of challenges, local conditions define individual resilience agendas.

Still, we can expect to see some core themes dominate in 2016, and many are unfolding now. It's critical for water industry professionals to keep up with these seven trends as they play out in the coming months.

## Trend #1: Cities Embrace Resilience

Just as the natural world has to adapt to survive, so too do our urban centers. Resilience matters in every way — not just for quick disaster recovery, but also for communities to feel confident that come flood, drought, or other water-related stresses, their city's future holds promise.

For these reasons, mayors, councils, utilities, and businesses are making resilience a top priority. The near-universality of urban

resilience needs has led to a new global network pioneered by the Rockefeller Foundation called 100 Resilient Cities (100RC). The foundation provides resources to help cities hire chief resilience officers (CROs) and develop resilience strategies.

Resilience leaders have also broadened the definition of resilience to include the capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what acute shocks and chronic stresses they experience. Seeing the city as a whole expands the scope of resilience to include social and economic factors as well as the physical.

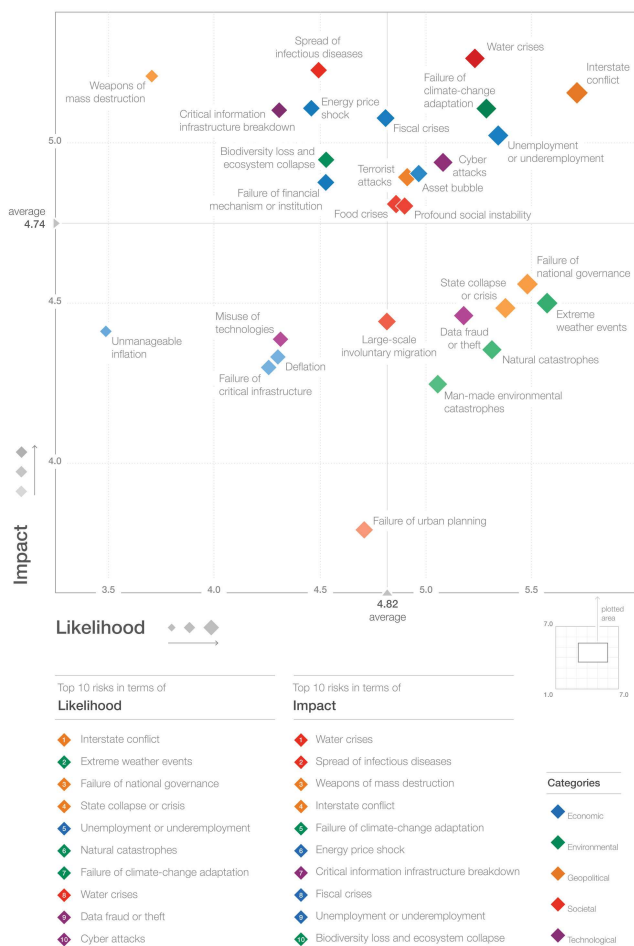
Perhaps the most important result of this trend is the recognition that a resilient city is a competitive city. Today, investors and businesses seek certainty that infrastructure will support their future growth and business interests. Water and wastewater system integrity as well as quick recovery from floods are no longer “nice to haves.” Resilience is the core goal that connects economic and social priorities.

## Trend #2: Climate Redefines Risk

Increasingly, the world is recognizing that climate change is causing sea-level rise and more frequent and intense storms or drought. This one-two punch from climate change isn't restricted to emerging economies. Water and wastewater utilities from Florida to California are facing the need to make their systems resilient to too much or too little water and to saltwater intrusion from rising tides and sea levels.

In the U.S., flood threats create challenges across multiple fronts. In fact, according to a report from the International Organisation for Economic Co-operation and Development's “Studies on Water,” by 2050 nearly 20 percent of the world's population will live at risk from floods. Until we adapt to climate change, we'll need to build systems to accommodate and hold back water.

Elsewhere, climate change has produced greater risk of water scarcity, as many communities in the Western U.S. know all too well. As if that weren't enough, a recent report from the World Economic Forum shows that water crises top the list of disasters in terms of impact.



Source: Global Risks 2015 report, World Economic Forum, Switzerland, 2015

### Water Crises Top The List Of Global Risks

In addition, the National Oceanic and Atmospheric Administration predicts more intense “El Niño effects” in 2016, which can be considered disasters in waiting. These include:

- Wetter-than-average conditions most likely in the Southern tier of the U.S., from central and southern California, across Texas, to Florida, and up the East Coast to southern New England. Above-average precipitation is also favored in southeastern Alaska.
- Drier-than-average conditions most likely for Hawaii, central and western Alaska, parts of the Pacific Northwest and northern Rockies, and for areas near the Great Lakes and Ohio Valley.
- Some improvement is likely in central and southern California but not drought removal. Drought is also likely to persist in the Pacific Northwest and northern Rockies, with drought development likely in Hawaii, parts of the northern Plains, and in the northern Great Lakes region.

While risk from climate change may often seem far off or someone else’s problem, utilities can use these reports to create the urgency needed to galvanize public support for resilience measures.

### Trend #3: Cities Using Risk-Based Planning

In the aftermath of Hurricane Sandy, flooded subways and the disruption of essential services in New York City sounded a wake-up call to put resilience on the top of public agendas. In response to this crisis, Mayor Bill de Blasio and his team, through the Mayor’s Office of Recovery and Resiliency, created a plan to improve the city’s resilience to future trauma. The first priority of this risk-based resilience plan was to ensure that the city could recover and emerge stronger both economically and socially from another major natural disaster.

This plan assigns extra investment and high priority to critical and vulnerable public assets like hospitals, transportation, and telecommunications, plus water and wastewater facilities. Short-term solutions aim to provide flood protection for individual buildings. The end goal is business and social continuity, which also provides a foundation for recovery and rebuilding. Other cities will look at this model in 2016 as a way to rationalize resilience investment.

### Trend #4: Greater Acceptance of Alternative Sources And Reuse

Droughts challenge the ability to meet water demand year to year. Utilities are exploring ways to proactively address drought as part of broader sustainability planning. Los Angeles includes the following goals in its Sustainable City pLAN, the roadmap to a city that is environmentally healthy, economically prosperous, and equitable for all.

- Source 50 percent of water locally by 2025, using both potable and non-potable sources, including stormwater recharge and recycled water.
- Reduce average per capita potable water use by 20 percent by 2017.
- Improve disaster preparedness and resiliency for the city, so commercial activity can return to normal after a disaster as quickly as possible, with measurable targets.
- Reduce municipal water use by at least 20 percent by 2017.

L.A.’s plans to increase the diversity of its water supply will provide national inspiration, particularly as communities accept impaired supplies like treated seawater and wastewater.

For instance, the world’s largest inland desalination plant, located in El Paso, Texas, produces up to 27.5 MGD from previously unusable brackish groundwater. The facility also removes more pathogens than required by public health regulations and helps protect fresh groundwater. Throughout drought-stricken regions, advanced reuse and desalination technologies are making these alternative sources more viable, both technically and financially. In 2016, the psychological barriers will be the last hurdles to fall.

### Trend #5: Creating Alternative Resiliency Funding

By now, the problems of aging infrastructure and the need to build more robust resilience defenses have provoked top leaders to pay attention. However, while there may be agreement on the need for resilient water and flood infrastructure, funding remains a challenge.



Water desalination plant construction in Carlsbad, CA

The year 2016 will see continued effort to build political will for water supply investment. Advocacy from the joint efforts of local and national leaders like the Value of Water Coalition and others is starting to open minds to the idea that investment in water infrastructure is essential, not just for drinking but also for economic, environmental, and social well-being.

While these debates continue, some utilities are using risk-based asset management strategies to squeeze additional performance from existing systems and set priorities. Risk analysis can lead to insights that put planning on solid ground, while enabling leaders to present choices to investors and the public. Recognizing risk and defining the level of tolerance for risk produces a stronger business case, whether support is public or private.

More practically, the data collected to measure risk also helps create a more useful picture of the entire lifecycle of a facility. Used for asset management, these strategies produce more efficiency and enable utilities to prolong the life of existing systems, which will remain essential in 2016 until more long-term projects get off the ground.

## Trend #6: Leading Cities Promote Resilience For Competitive Advantage

Cities compete to attract more jobs and to be recognized as thriving, vibrant, and desirable places to live and do business. The ability to rebound quickly and successfully from shocks and stresses is essential for a city to remain competitive, investable, and livable. Leading cities now promote water capacity and resilience as key levers for economic development and investment.

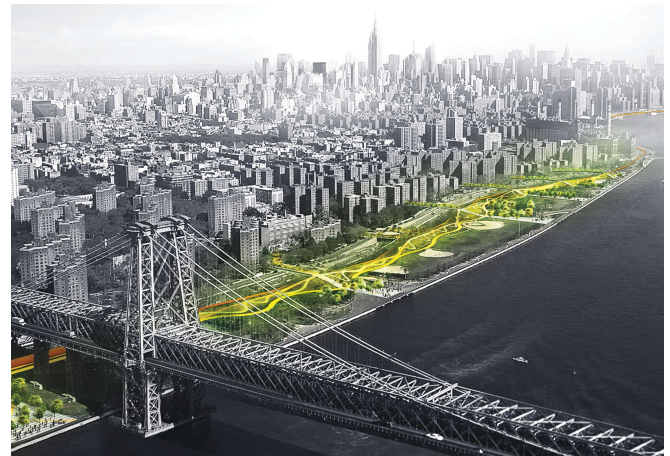
Increasingly, businesses look at cities' resiliency claims and assess potential risks when deciding where to locate. As a result, a reliable water supply and a reputation for managing flood risk are qualities on corporate relocation checklists. Water systems will need to find ways to leverage their capacity and system integrity in the competition for funding.

In addition, the more resilient the city, the greater its ability

to attract investment. Investors want the same reassurances that businesses do. It's only a matter of years before bond investors develop indices for measuring resiliency to price the risks in and around cities. How well cities mitigate those risks will directly affect their perceived attractiveness and their ability to raise capital. Even today, more and more companies are developing environmental and social sustainability standards as a way to measure and communicate their sustainability to capital investors (e.g., the Dow Jones Sustainability Index).

## Trend #7: Building Resilient Destinations

As we move into 2016, cities will see the value in building resilient destinations that incorporate civil flood protection with green, low-impact design features, thereby enabling the creation of investable development zones that can generate revenues to offset the cost of the critical infrastructure while creating emotional attachment areas that raise civic pride. For example, the High Line in New York City, a repurposed, abandoned elevated train spur, has turned into a destination enjoyed by residents and tourists alike and has drawn further economic development along its corridor. In the same way, the proposed flood defenses for Manhattan, dubbed by some "The Dry Line," are being developed to protect the city from storm surge and sea-level rise, while also attracting people to a landscaped promenade with the potential for mixed-use real estate development.



Manhattan's East Side Coastal Resilience project concept combines storm surge defense and mixed use. (Credit: Image Courtesy of BIG-Bjarke Ingels Group)

Cities and utilities can be heartened that trends are pointing to more ways to cope with perennial resilience issues, from knowledge-sharing through platforms like 100 Resilient Cities, pioneered by the Rockefeller Foundation, to progress in risk-based planning. Investors and ratepayers alike are increasingly acknowledging the value of water. As resiliency becomes more of a mainstream issue, let's hope 2016 is the year when this momentum finally produces sustainable funding — in time to meet the next resiliency challenge. ■

## About The Author



John Batten is the Global Water and Cities Director for Arcadis, leading a global team dedicated to delivering outcomes that improve quality of life, safely and sustainably. As an industry thought leader on all aspects of resiliency, Batten's 30 years in the consultancy sphere include management of water utilities and public health facilities.