
Building Resilient Cities



CURRICULUM GUIDE & APPROACH FOR BREAK-OUT GROUPS

These materials may be replicated for educational purposes only and must include proper attribution to all parties.

BUILDING CLIMATE RESILIENCE IN CITIES: Curriculum Guide & Approach for Break-out Groups

Breakout groups should be organized for each of the future climate risk scenarios that have been developed through local climate adaptation planning studies. A facilitator and co-facilitator are assigned to each group. The groups are provided with supporting facilitation materials, including copies of the *Building Resilient Cities* paper, worksheet templates and example tables from other workshops, flip charts, sticky notes, pens etc.

	Example Climate Risk Scenario (scenarios may vary based on location)	Facilitator
Group #1	Extreme Heat and Extended Heat combined—impacts on tall buildings (commercial/business high rises and residential high rises)	
Group #2	Extreme Heat and Extended Heat combined—impacts on residential low rise and commercial low rise	
Group #3	Flooding due to extreme rain—impacts on tall buildings (commercial/business high rises and residential high rises)	
Group #4	Flooding due to extreme rain—impacts on residential low rise and commercial low rise	

Each break out group completes three consecutive discussion modules. These modules guide the groups through consideration of the ‘four cornerstones’ for developing resilience in a local area, as described in the accompanying paper *Building Resilient Cities: From Risk Assessment to Redevelopment*. The paper provides examples of the kinds of measures that have been identified in previous workshops associated with each cornerstone.

Discussion Module #1: Identify local area risks that are priorities for future collaboration

This Module correlates with
CORNERSTONE #1: IMPROVING ASSET-FOCUSED RISK MANAGEMENT
in the *Building Resilient Cities* paper.

DURATION: approximately 75 minutes

NOTE: At the start of Module #1, please ask participants to write their names on the tent cards and place in front of them. Secondly, take 5 minutes to go around the room and have each participant do a brief introduction, i.e. name, title and organization. The goal of the module is then read out to the participants, and the group is reminded of the key aspects of the risk scenario that they are to address.

GOAL: *To identify ways to address the climate-related risks in this scenario through measures that motivate, incent and support asset owners to take action at the level of their individual assets. Based on this discussion, identify and prioritize the remaining risks to which the local area will still be exposed, even after risk management improvements are made at the individual asset level.*

1. Each participant is asked to share what is at stake for them with reference to the risk scenario that has been presented to the group. (Facilitators may ask participants to write their priority risk exposures on post-it notes. The facilitators will cluster the post-it notes to identify the risks that are a shared priority among the different stakeholders in the group—duration approximately 15 mins.)
2. Discuss the risks associated with the climate scenario that multiple stakeholders share as common priorities.
3. Of the risks identified above, identify measures that could motivate and support asset owners, e.g. property owners, infrastructure providers and local businesses, to better and more fully manage those risks on their own within a near- to medium-term time frame.
4. Discuss what risks will be fully addressed and what priority risks will remain unmanaged, even if the above measures are successfully implemented. Factoring the likeliness and timeliness of actions by asset owners, what will be the primary remaining risk exposures confronting the local area over the near/medium term?

TOOLS & TEMPLATES:

- [Module #1 Worksheet](#)
- Written description of how society has organized itself to reduce fire risk (see appendix A)

Discussion Module #2: Develop new approaches to climate risk management & transfer at the local area level

This Module correlates with
CORNERSTONE #2: LOCAL AREA RISK MANAGEMENT
in the *Building Resilient Cities* paper.

DURATION: total of 60 minutes

GOAL: *To explore ways to manage, pool, spread and transfer the above identified remaining risks that confront the local area. Arrive at a group consensus on the top 3-5 measures or new approaches most suited to address the climate risk scenario.*

1. Based on what has been identified as the remaining, unmanaged risks in Module #1, what new approaches to managing, pooling, spreading and transferring climate change risks on a neighborhood or other local area scale could make the area insurable against emerging climate change risks over the long-term? What new information needs to be collected and shared, and what new capacities need to be built to manage risks effectively on a local area basis?
2. Could such new approaches create product development potential and other market opportunities for insurers and other urban stakeholders?
3. Is there a “big new idea” regarding climate risk management at the local area scale? What risks would still remain?

TOOLS & TEMPLATES:

- **Module #2 & 3 Worksheets:** The focus of Module #2 is to complete the first two columns of the “Module #2 & 3” worksheet.
- See examples of a complete template in Table 3 of the *Building Resilient Cities* paper.

NOTE: By the end, each breakout group needs to be ready to present their new approach coming from Module #2.

Discussion Module #3: Secure optimal returns and outcomes from local area risk management investments

This Module correlates with
CORNERSTONE #3: RESILIENCE UPGRADING OF THE LOCAL AREA and with
CORNERSTONE #4. COMMUNICATING RESILIENCE BENEFITS
in the *Building Resilient Cities* paper.

DURATION: total of 60 minutes

GOAL: *Discuss ideas for investment or redevelopment of the exposed area that would address the remaining risks identified in Modules #1 and #2 while also improving the everyday functioning and amenities of the local area. Select two people from the group to present at the plenary discussion.*

1. In addition to the risk management approaches identified in Module #2, what measures, approaches and investments would further reduce risks while also creating economic value and quality of life benefits to property owners and residents? (See examples in Table 4 of the *Building Resilient Cities* paper.)
2. Could the area's increased amenities & resilience be measured & communicated (KPIs) so as to create value? (See Table 5 of the *Building Resilient Cities* paper.)
3. What is needed to enable these approaches and investments?

TOOLS & TEMPLATES:

- **Module #2 & 3 Worksheet:** building on the work completed in Module #2 (page 4), use the same worksheet to complete the column "How could these measures/innovations be developed to enhance amenities and generate value for the local area?"
- See Tables 4 and 5 of the *Building Resilient Cities* paper.

NOTE: By the end, each breakout group needs to be ready to present their top economic opportunities from module #3.

Appendix A: Lessons from the Great Fires of the 19th Century¹

Urban Conflagrations destroyed more property than any other peril in the 19th centuries:

- The industrial revolution created conditions that make the peril of fire more lethal and destructive
- Cities and towns were no longer simply single or double stories homes or merchant buildings
- Massive factories, warehouses and multi-story tenements and great houses of banking and commerce
- Boston (for an example) burned in 1653, 1679, 1711, 1760, 1824, 1825 and 1872
- Major conflagrations New York – 1835, Chicago – 1871, Boston – 1872, Baltimore – 1904 and San Francisco – 1906

The Great Fires of the 1870s were a classic tipping point—stakeholders were frightened into a common cause:

- Creation of National Fire Protection Association (1896)
- Welcomed international help
- Joined international fire safety movement
 - Urban planning
 - Building codes
 - Fire resistive materials
 - Telecommunication of alarms

By 1925, all of the major sources of conflagration had been much reduced: electric power replaced gas lights and candles, greatly reducing the incidence of fires from lighting needs the vanishing of the horse as a means of transportation removed from cities highly flammable hay and stables new commercial buildings now included sprinkler systems that protected both the building and its occupants electric fire alarm systems notified central dispatching stations in seconds of the location of a fire, fire engines and their pumps were powered by potent and reliable gasoline engines major cities in the U.S. were now served by professional fire departments state governments and code-setting bodies such as the

NFPA established uniform standards for building construction, fire apparatus, fire department operations and staffing, water supply needs, and control of combustibles and ignition sources.

Taken together, these technological, social, and political forces all but eliminated the threat of city-destroying fires that had plagued the United States since earliest colonial times. Fifty years after the destruction of Chicago and Boston, U.S. cities felt confident that they were no longer at serious risk of this terrible fate.

In most cities today, fire has been reduced to a sporadic and isolated threat. But throughout history the constant risk of fire has left a deep and lasting imprint on almost every dimension of urban society.

¹ Notes summarized from “Urban Conflagrations in the United States” by William M. Shields, Ph.D. retrieved online <http://www.hss.energy.gov/nuclearsafety/nfsp/fire/workshop2010/shields/conflagrations.pdf> and a presentation titled “History, Tipping Points and Unexpected Consequences: Learning From the Past—Thinking About the Future” by Pete Thomas, in a presentation at the NCSE Seminar in January 2013.

Building Resilient Cities Curriculum Worksheets

Module #1 Worksheet

Breakout Group	KEY STAKEHOLDERS (i.e., those directly impacted if the scenario risks are left unmanaged)	In this scenario, what local area risks are priorities for future collaboration?		
		1. What risks do multiple stakeholders have in common within this climate risk scenario?	2. What can we motivate and support asset owners (e.g. property owners, utilities, infrastructure providers and local businesses) to do to more fully manage these risks on their own, within a near- to medium-term time frame?	3. Factoring the likeliness and timeliness of actions by asset owners, to which risks will the local area remain exposed over the near/medium term?
Session #1 SCENARIO: _____ _____				
Policy Makers, Planners & Regulators	Local Government			
	Provincial Government			
City-building Enterprises (private & public)	Infrastructure & Utilities			
	Public Services & Amenities			
	Insurers			
	Property Development			
	Banking & Finance			
Residents/Asset Owners	Property Owners & Managers			
	Local Business Operators			

Modules #2 & 3 Worksheet

Breakout Group Modules #2 & 3 SCENARIO: _____ _____	AREA OF INNOVATION	What are the mutually <i>reinforcing risk management measures and innovations</i> across these sectors that could address the key risks remaining at the 'local area' scale?		
		REMAINING RISK TO THE LOCAL AREA #1	REMAINING RISK TO THE LOCAL AREA #2 <i>Use additional worksheets if other remaining risks have been identified</i>	IS THERE A BIG IDEA? <i>How could these measures/innovations be developed to enhance the performance and generate value for the local area?</i>
		MODULE #2		MODULE #3
ENABLING ENVIRONMENT – POLICY, REGULATORY, LEGAL & FISCAL INNOVATION <i>Creating necessary market signals & incentives</i>	Public Policy			
	Planning & Development Control			
	Infrastructure & Utilities			
	Public Services & Amenities			
	Insurance			
	Property Development & Real Estate			
	Banking & Finance			
	Institutions/Organizations			
PRODUCT, TECHNOLOGICAL & BUSINESS INNOVATION <i>Creating necessary technical, finance & insurance solutions</i>	Communications, Education & Training			
INSTITUTIONAL & COMMUNICATIONS INNOVATION <i>Creating new management, customer & citizen behaviors</i>				

Building Resilient Cities

Curriculum Graphics

FIGURE 1. THE FOUR CORNERSTONES OF A 'RESILIENCE ZONE' STRATEGY

1. ASSET-FOCUSED RISK MANAGEMENT

Develop mechanisms to support household & enterprise level action.

2. LOCAL AREA RISK MANAGEMENT

Develop mechanisms for risk management & transfer at the scale of the local area.

3. RESILIENCE UPGRADING

Design risk reduction measures to enhance today's performance and benefits.

4. COMMUNICATING RESILIENCE BENEFITS

Ensure understanding of benefits and effective use of the new 'Resilience Zone'.

STRATEGY QUESTIONS FOR STAKEHOLDERS

How could we motivate and support asset owners to more fully manage their climate and disaster risk exposures?

How could we manage, pool, spread & transfer the remaining risks on a district or other local area basis?

Could risk management investments be designed so as to improve the area's benefits today?

How would users be supported to fully secure new benefits? How would the area's unique benefits be communicated to the market?

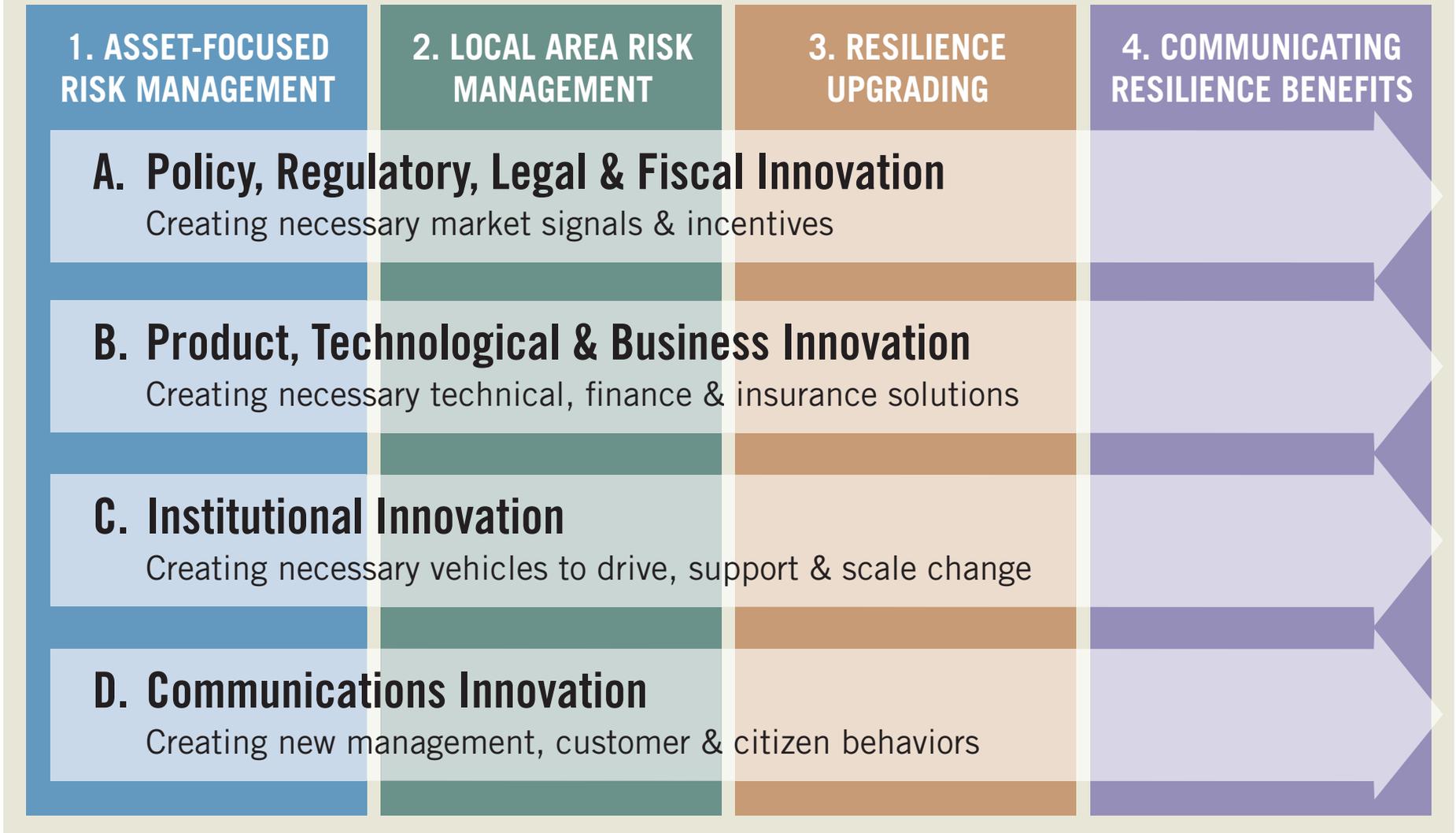
Factoring the above, to which risks will the local area remain exposed over the near / medium term?

How could such new approaches be developed into market opportunities for insurers and other city-building enterprises?

How could the area's increased amenities & resilience be measured? How could they be compared with competing locations?

How do you help establish resilience as a new standard in city-building and location choice?

FIGURE 2. DEVELOPING THE MARKET ECOSYSTEM FOR RESILIENCE UPGRADING





Kick-starting the Resilient City Overview Presentation

KICK-STARTING THE RESILIENT CITY



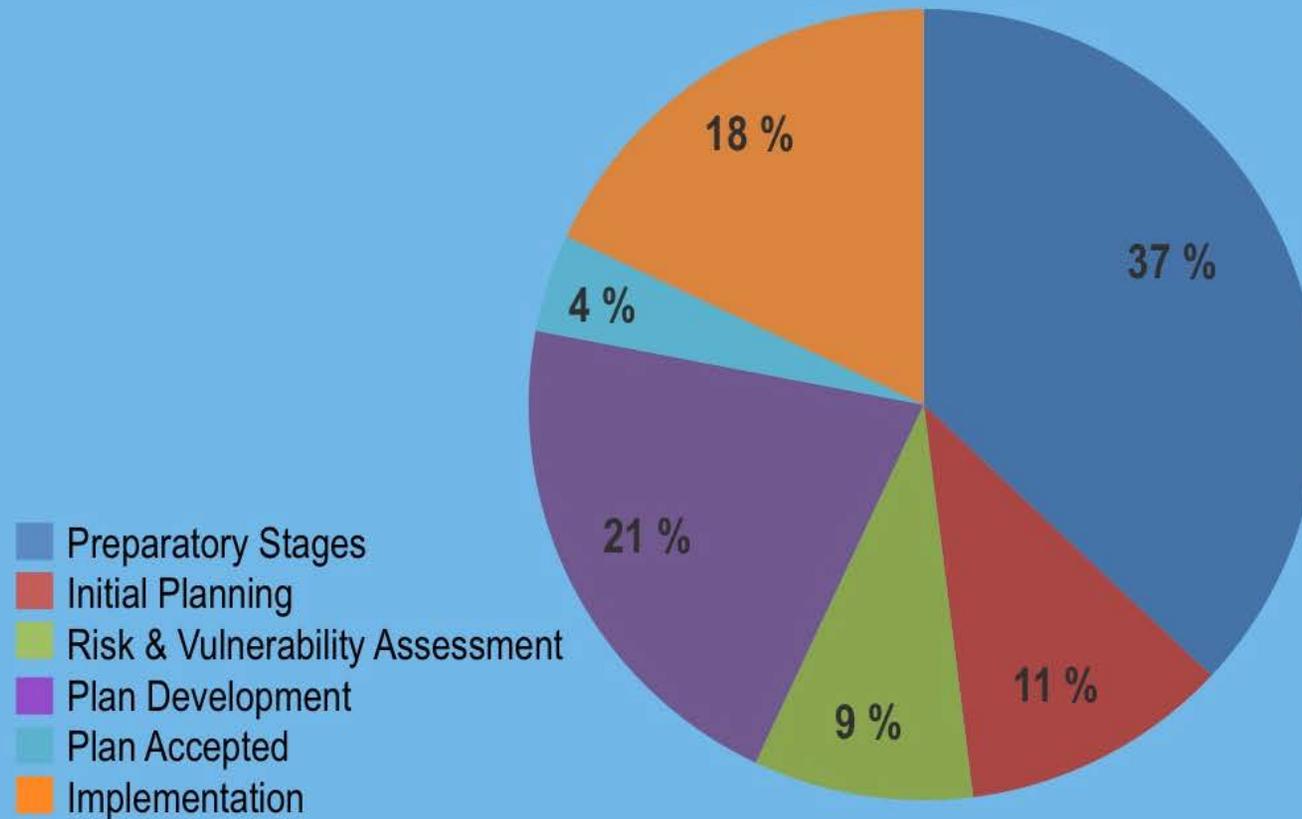
PHOTO: TAXIARCHOS (GNU)

These materials may be replicated for educational purposes only and must include proper attribution to all parties.



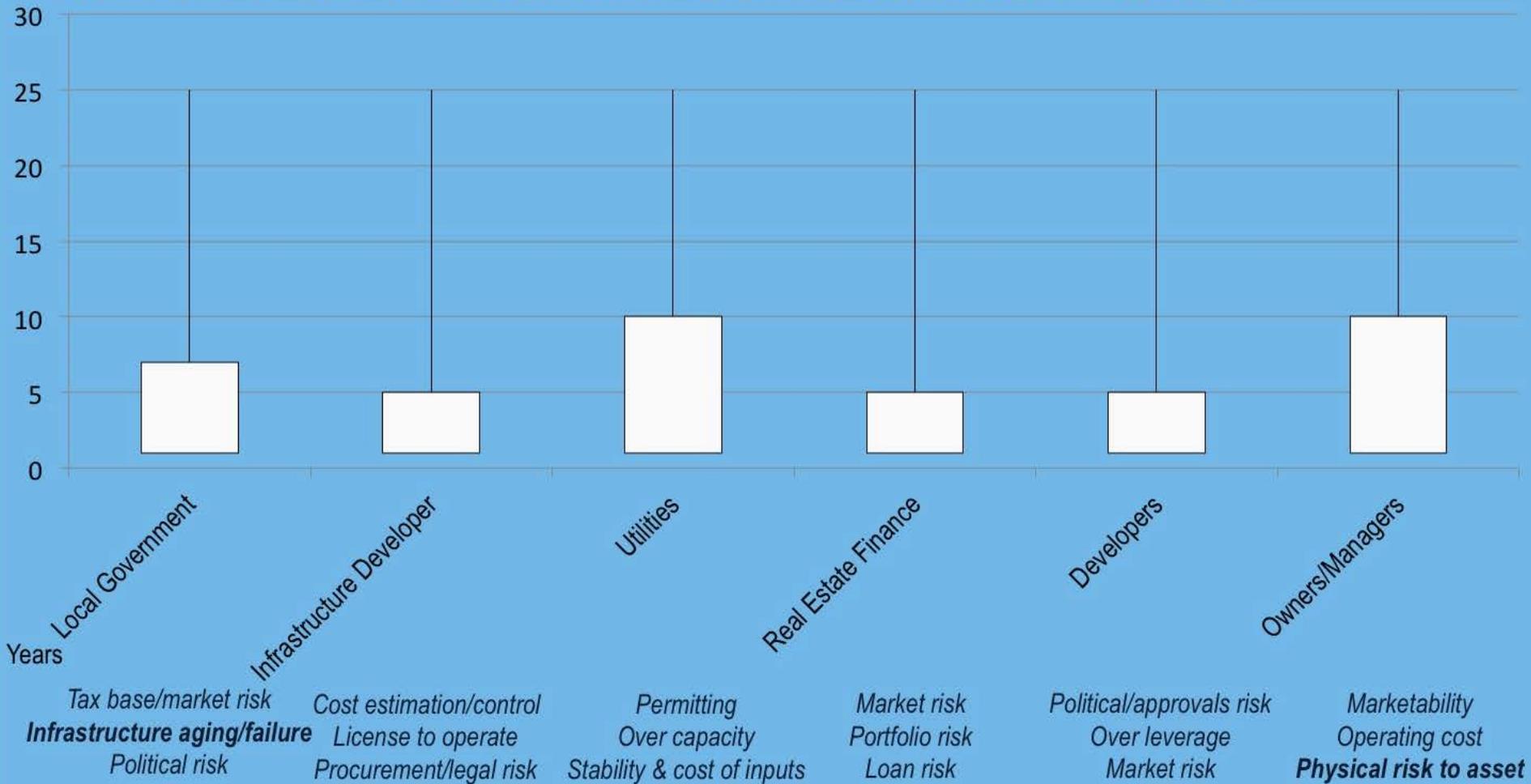
STATUS OF MUNICIPAL ADAPTATION PLANNING

N = ~ 1000 surveys/468 respondents ICLEI Member cities and counties (mostly USA)

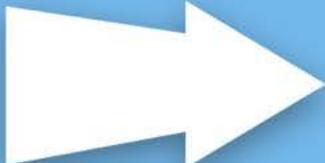


Source: MIT Dept Urban Studies & Planning / ICLEI-Local Governments for Sustainability (2012)

PRIORITY CITY-BUILDING RISKS & TIMEFRAMES



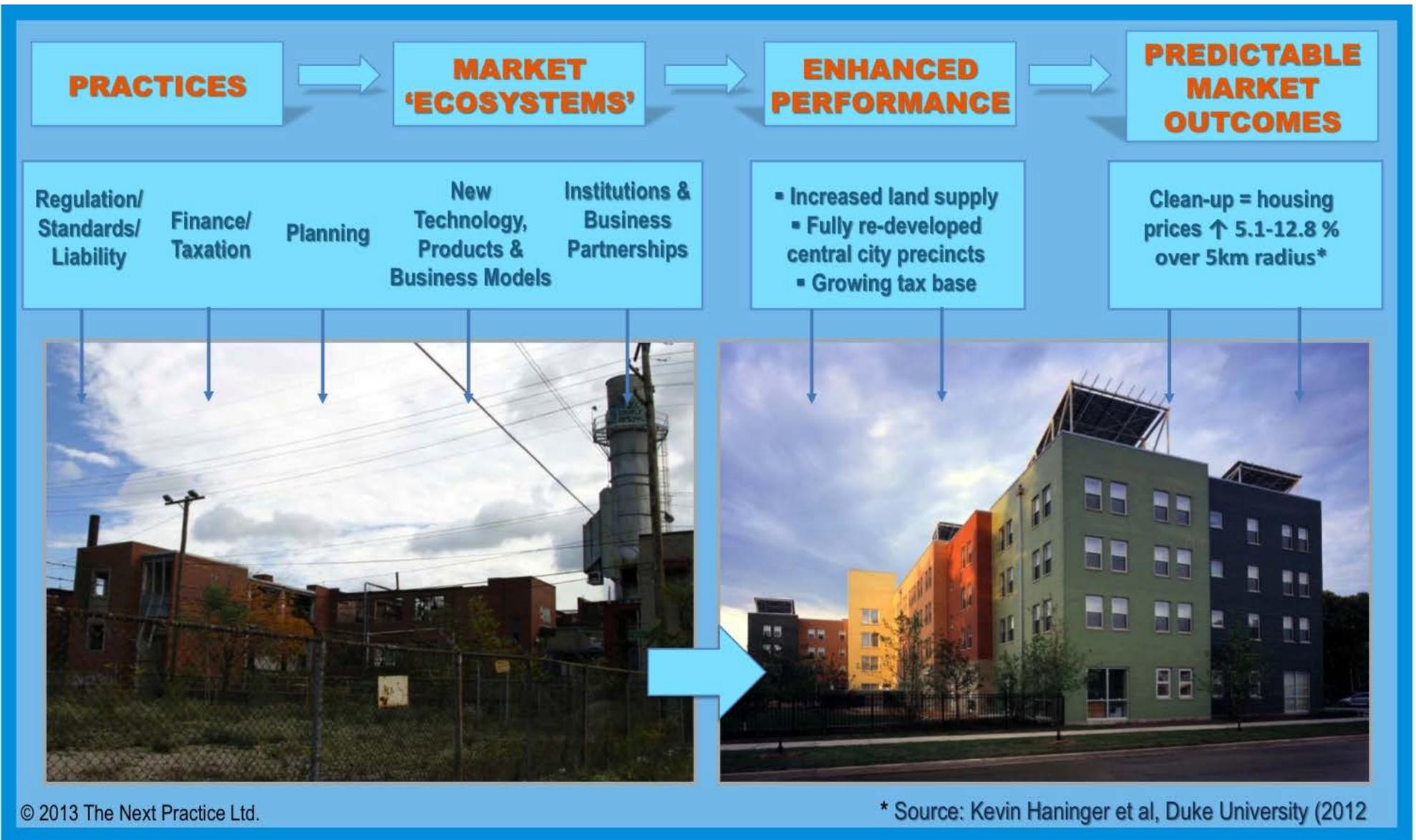
Source: Ceres/ClimateWise/The Next Practice (2013)

RISK  **PERFORMANCE**

RESILIENCE 

Resilience is the ability of an urban area or system to provide predictable benefits to residents and users, and predictable returns to investors, under a widening range of circumstances.

© 2013 The Next Practice Ltd.







RESILIENCE?

Source: Ceres/ClimateWise/The Next Practice (2013)

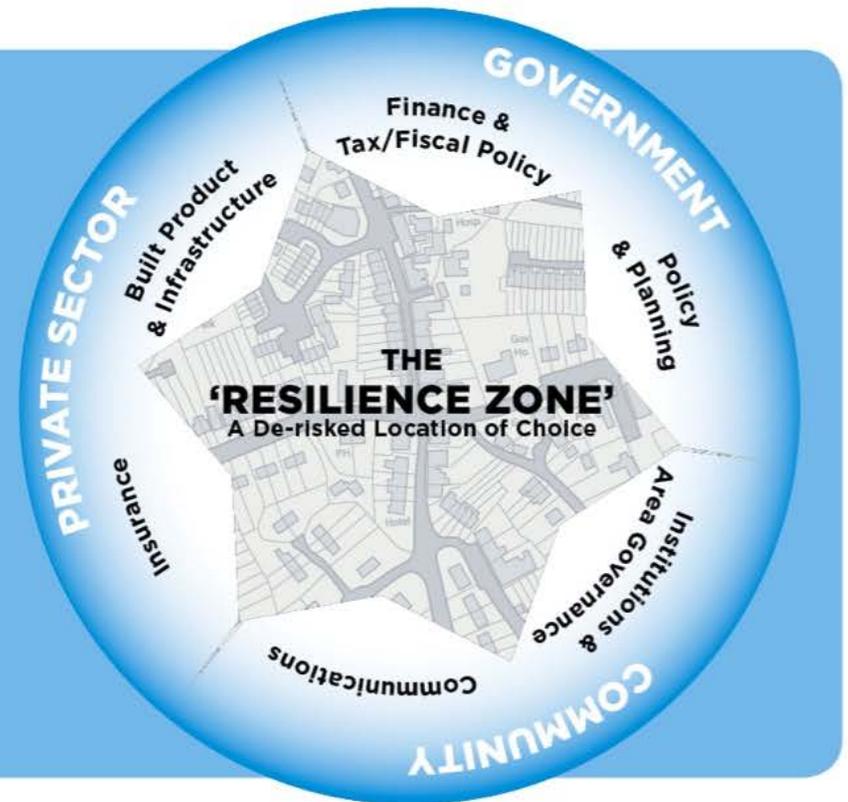


PHOTO: TAXIARCHOS (GNU)

BUILDING RESILIENT CITIES

THE RESILIENCE OPPORTUNITY

A Resilience Zone initiative establishes the market support for a new form of urban performance: resilience. Through collaboration, a mix of customized solutions can be designed to manage risks that still confront the local area after options have been exhausted at the individual property and enterprise scales. Solutions at the scale of the zone can also be purposefully designed to increase the area's function, amenities, and economic performance.



Source: Ceres/ClimateWise/The Next Practice (2013)

THE RESILIENCE ZONE CONCEPT

draws upon other North American traditions of local area management

Through collaboration, new market dynamics have been established to address other urban risk areas: brownfields redevelopment, downtown revitalization, and community safety.

- *Business Improvement Areas*
- *Downtown Partnerships*
- *Empowerment Zones*
- *District Utilities*
- *TIF Districts*
- *Enterprise Zones*
- *Community Improvement Districts*
- *RESILIENCE ZONES*

Source: Ceres/ClimateWise/The Next Practice (2013)

1. LOCAL AREA RISK MANAGEMENT

Design the mechanisms and measures for local area risk management

The logic of Enterprise Risk Management can be applied to local areas. Local Area Risk Management is a collaborative effort to devise customized solutions to risks that are distinct to the Resilience Zone. This involves establishing redundancies and mechanisms for responsiveness, safe failure and rapid recovery to current and emerging risks.

- *An area risk management strategy & institution*
- *Risk data collection & analysis*
- *Insurance innovation*
- *Associated planning amendments, investments, and redevelopment*
- *Risk management coordination and support*

Source: Ceres/ClimateWise/The Next Practice (2013)

**FROM 'ENTERPRISE
RISK MANAGEMENT'**

**TO 'LOCAL AREA
RISK MANAGEMENT'?**

MANAGE CAPITAL

MANAGE MARKET

Risk to
Reinvestment

Risk to
Earnings &
Asset Value

MANAGE DESIGN & OPERATIONS

Risk to
Performance

**LOCAL
AREA
INSURANCE**

Risk to
Function

MANAGE EMERGENCY

Risk to
Adaptability

MANAGE CHANGE

© 2013 The Next Practice Ltd.

2. RESILIENCE UPGRADING ('2+2=5 SOLUTIONS')

Invest in premium performance

While reducing risks, cost effective measures can also be identified to enhance the overall performance of the area for living and business:

- *Long-term operating cost predictability*
- *Enhanced health, safety & emergency services*
- *More responsive planning, improved landscape and urban design*
- *Improved facilities, increased amenities*

Source: Ceres/ClimateWise/The Next Practice (2013)



FOTOS DE BARCELONA.com | Institut Cartogràfic de Catalunya



FOTOS DE BARCELONA.com | Institut Cartogràfic de Catalunya





3. COMMUNICATION STRATEGY

Facilitate market recognition

Enhanced resilience—reduced exposure, increased performance—must be carefully and thoroughly communicated to deliver benefits to users and to secure market recognition. Performance benchmarking and place branding are key communications elements.

Source: Ceres/ClimateWise/The Next Practice (2013)



PHOTO: TAXIARCHOS (GNU)

These materials may be replicated for educational purposes only and must include proper attribution to all parties.



Overview of Building Urban Climate Resiliency - Workshop Process

Source: Ceres/ClimateWise/The Next Practice (2013)

1. Identify local area risks that are priorities for future collaboration

1A

- What is at stake for you with reference to the risk scenario?
- What risks do multiple stakeholders have in common within this climate risk scenario?

1B

- How could we motivate and support asset owners to more fully manage these risks on their own, within a near-term time frame?

1C

- Factoring the above, to which risks will the local area remain exposed over the near/medium term?

2. Develop new approaches to climate risk management & transfer at the local area level

2A

- How could we manage, pool, spread & transfer the remain risks on a neighborhood or other local area basis ?

2B

- Could such new approaches create product & other market opportunities for insurers and other city-building enterprises?

2C

- Is there a 'big new idea' regarding climate risk management at local area scale?

3. Secure optimal returns and outcomes from local area risk management

3A

- Could the identified measures, linked together, be implemented so as to improve the area's current function & amenities?

3B

- Could the area's increased amenities & resilience be measured & communicated so as to create value?

3C

- Is there a 'big new idea' about resilience as new standard in city-building and location choice?