

# The Disaster Resilience Scorecard

Risk & Resilience in the Face of Global Change  
Aspen Global Change Institute

**Dale Sands**

December 2015

# Agenda



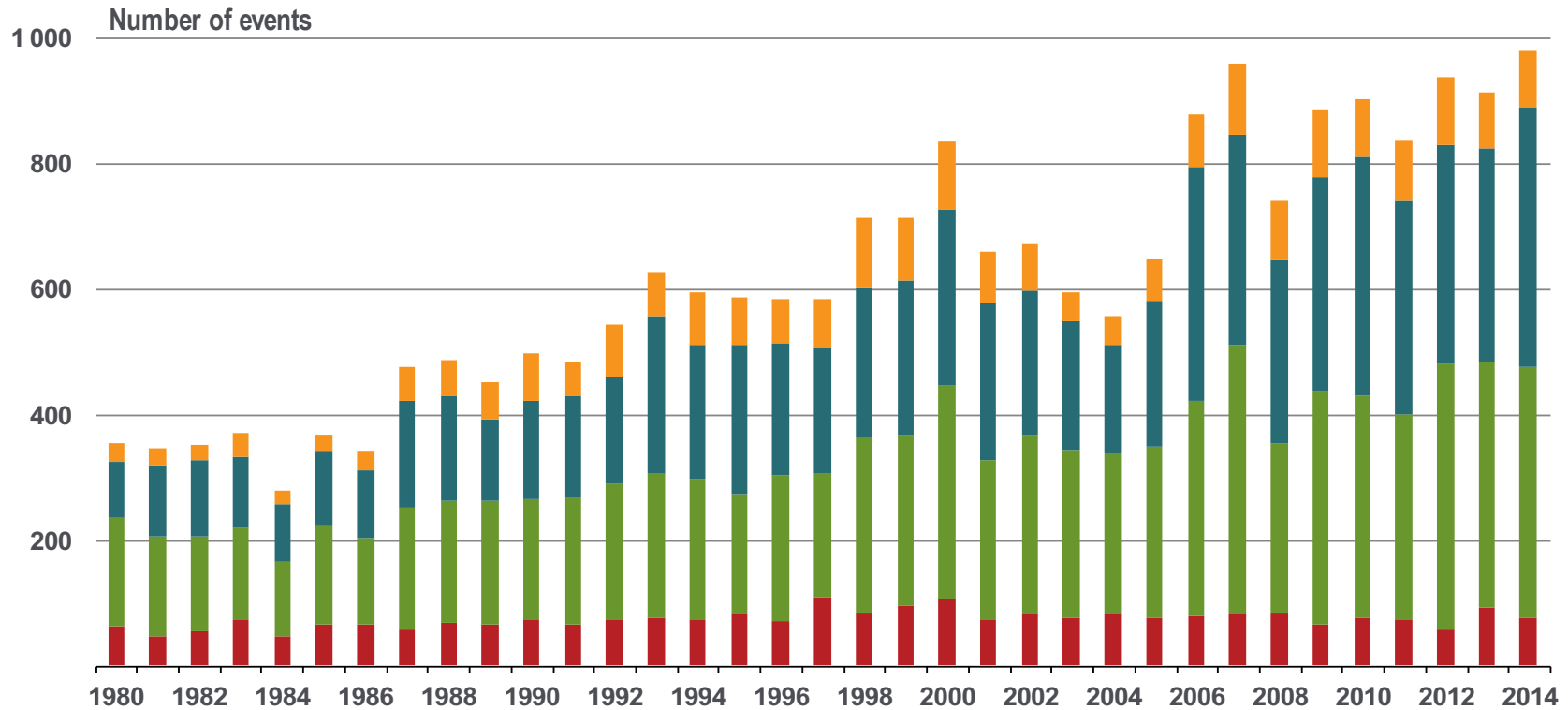
- Climate Concerns & Natural Disaster Trends
- Disaster Resilience Scorecard
- The United Nations & Sendai Framework
- Summary

## Resilience Definition

# Resilience

- The ability of human settlements and organizations to withstand, recover quickly from and continue to prosper in the context of increasing impacts of natural and man made hazards or disasters.
- This includes acute shocks from natural disasters and chronic stresses such as those from climate change.
- Resilience is an inescapable attribute of a smarter planet...Resilience requires planning and adaptation in advance of an impact.

# Loss Events Worldwide 1980 – 2014

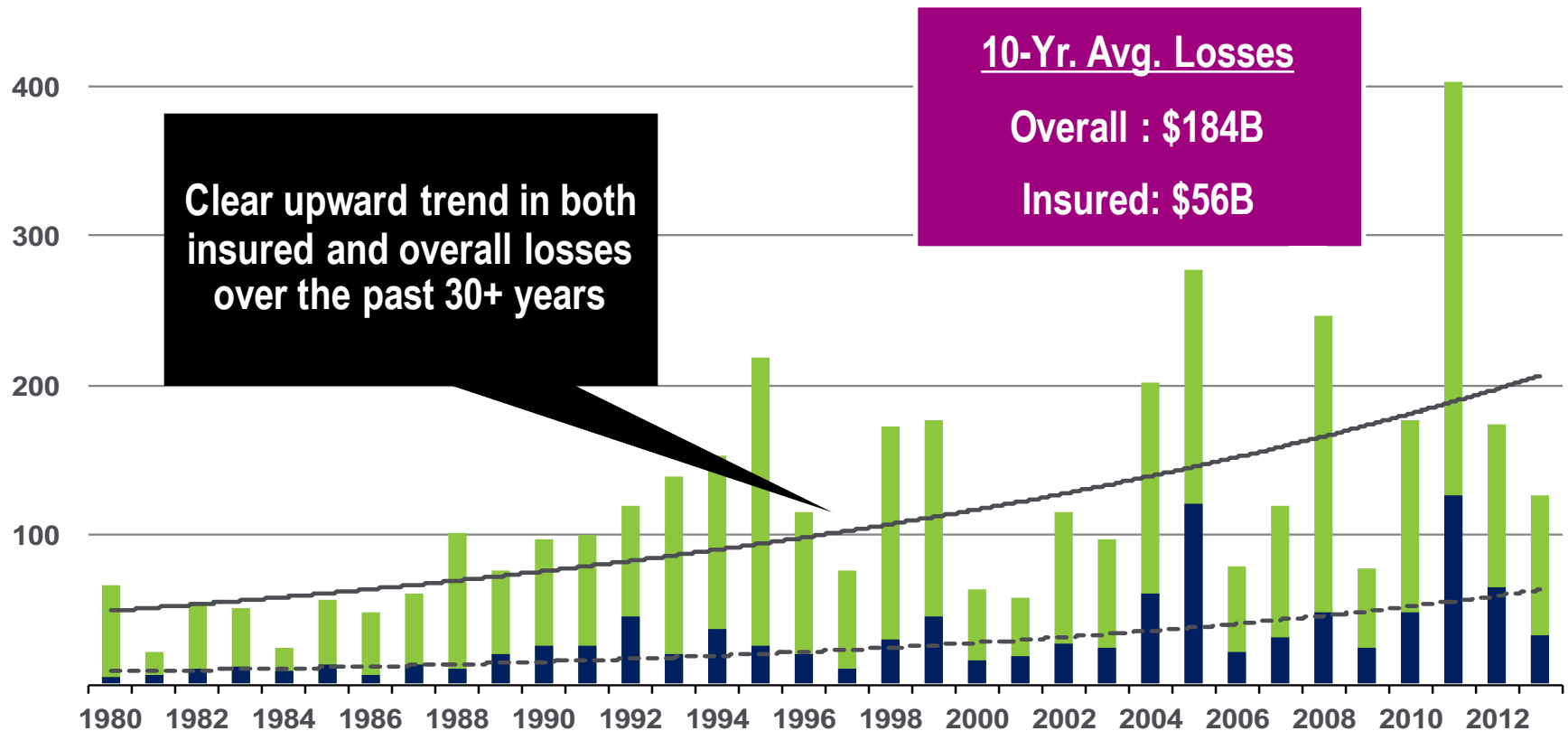


Source: Geo Risks Research, NatCatSERVICE – As at January 2015



# Global Losses Due to Natural Disasters

US\$ bn



Source: MR NatCatSERVICE

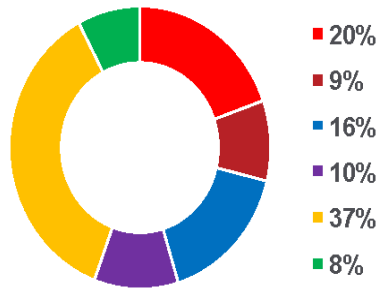
Overall losses (in 2013 values)

Insured losses (in 2013 values)

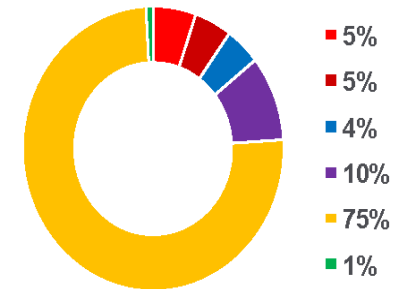
# Loss Events Worldwide 2014

Percentage distribution – ordered by continents

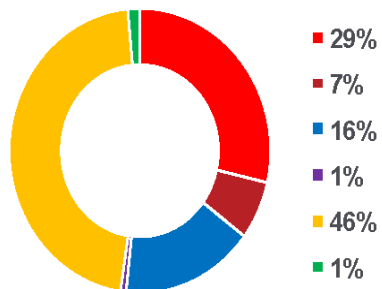
980 Loss events



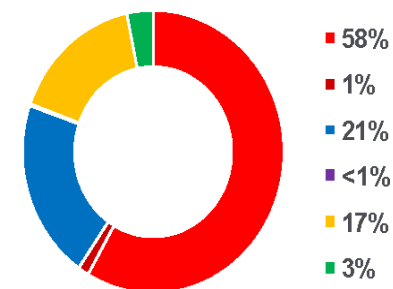
7,700 Fatalities



Overall losses US\$ 110bn



Insured losses US\$ 31bn



■ North America,  
incl. Central America  
and Caribbean

■ South America

■ Europe

■ Africa

■ Asia

■ Australia/Oceania

## Disasters 2005 to 2014

### Top Ten Countries with Most Disasters 2005-14

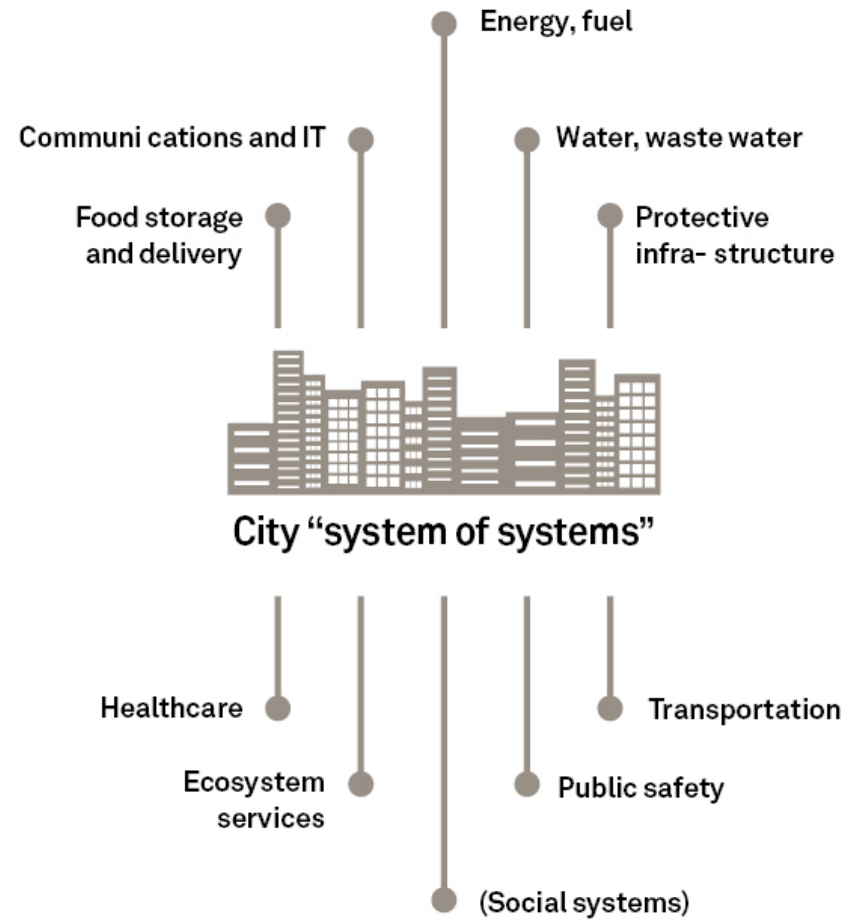
Country	# of Disasters	Damages (\$B)	% of GDP
China	286	265	3.2%
USA	212	443	2.7%
Philippines	181	16	6.4%
India	167	47	2.5%
Indonesia	141	11	1.3%
Vietnam	73	7	4.5%
Afghanistan	72	72	351.0%
Mexico	64	16	1.4%
Japan	62	230	3.9%
Pakistan	59	25	11.1%



# Disaster resilience has to address the “system of systems” that makes up a city.

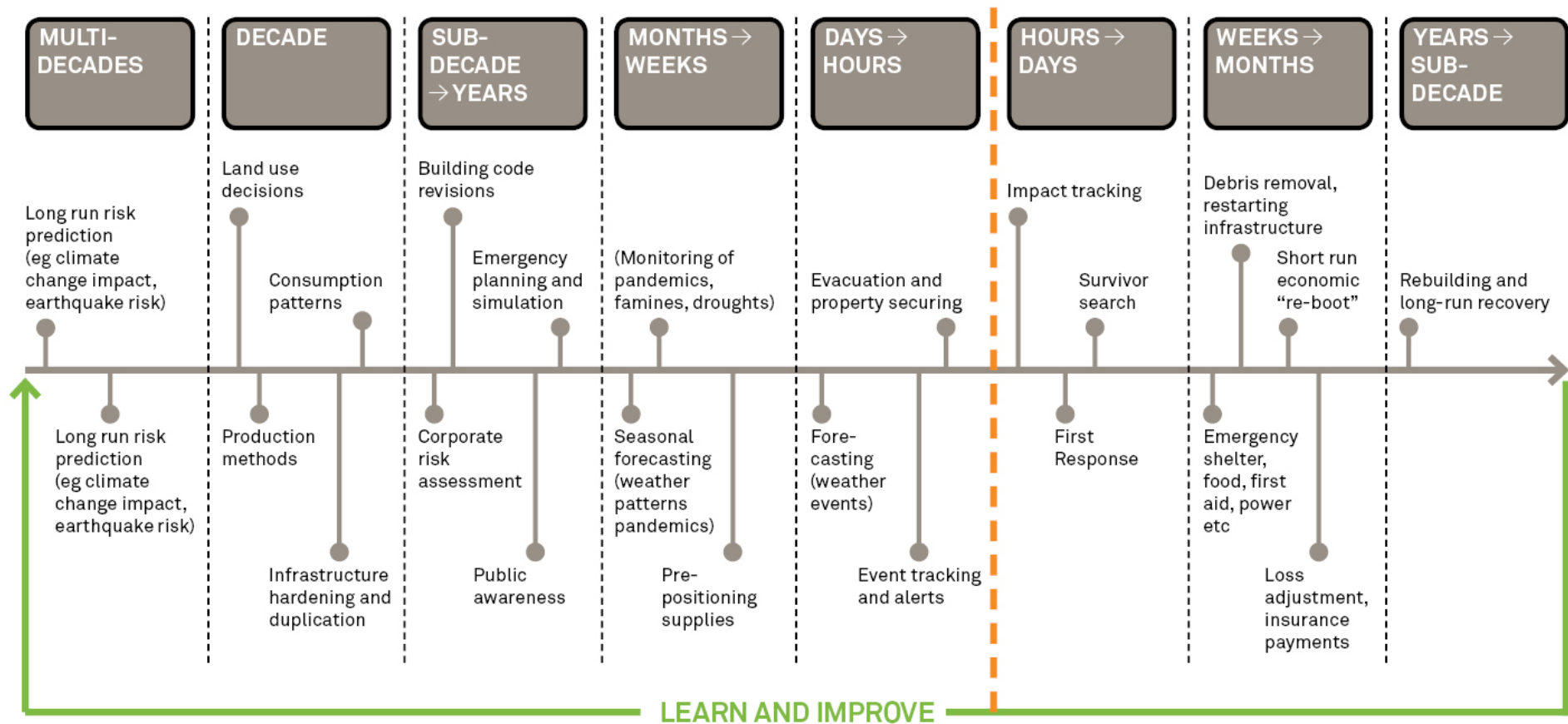
## For example:

- Multiple connections and interactions:
  - Causal
  - Resources, data
- If you ignore the connections, you may miss key impacts or key interdependencies, resulting in “failure chains”.
- But because each system may have different owners (sometimes in the private sector) and stakeholders, resilience is a multi-organizational endeavor.





# Disaster resilience is a process, spanning multiple activities and time-scales.



# If we could measure disaster resilience across all of the systems and timescales involved...



## The city could:

- Identify exposures and vulnerabilities in the population, infrastructure, economy and environment
- Track citizens' awareness of hazards and required responses
- Set priorities and identify key decisions to be made
- Target and optimize the investment of money and effort to improve resilience over time
- Track progress
- Justify that investment to the public and to taxpayers
- Integrate the contributions of multiple stakeholders
- Model the impact of land use or infrastructure decisions, gauging the effectiveness of actions to improve resilience

# If we could measure disaster resilience across all of the systems and timescales involved...



## The Community could:

- Understand the risks they face.
- Understand their role in achieving a level of resilience.



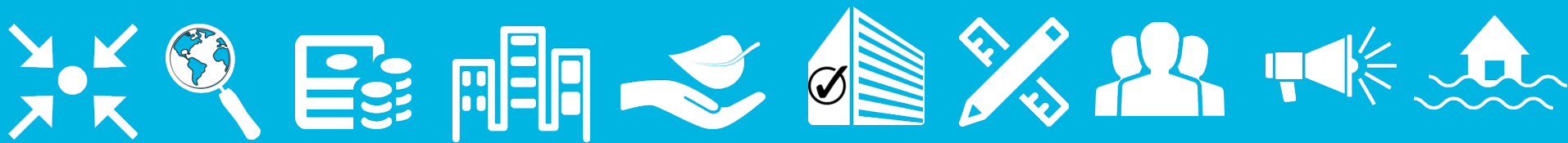
## Private sector companies could:

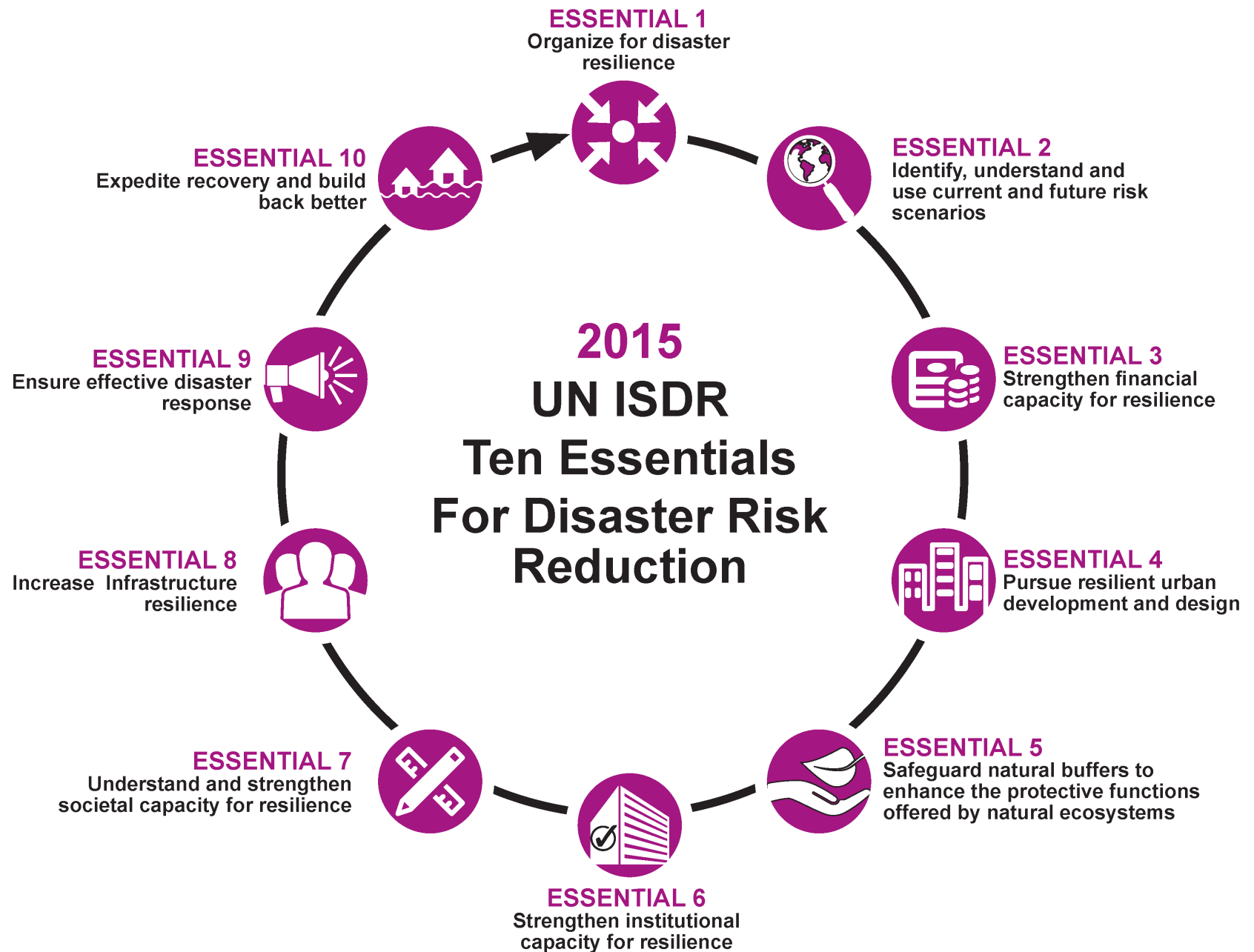
- Assess risks to their operations and supply chains.
- Understand where they need to engage with cities to protect their operations – so helping to safeguard the local economy.
- Potentially, reduce their insurance and capital costs.

## The Government enterprise could:

- Optimize and improve resilience in short, medium and long terms regionally and nationally.
- Leverage the knowhow in communities and in the private sector.

# The “Ten Essentials” and the Concept of the Scorecard



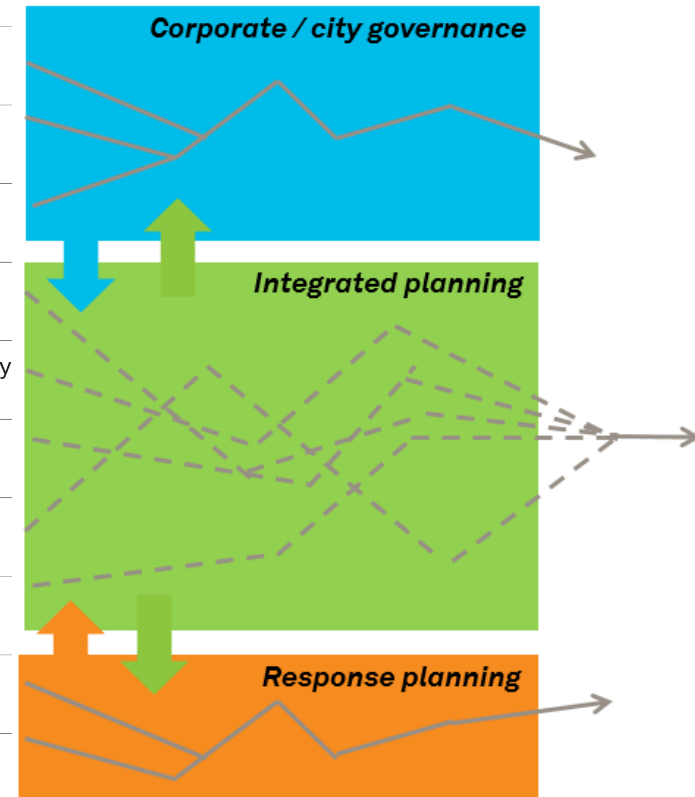


# Our starting point – The UN's Ten Essentials











## City Resilience Scorecard

### The Ten Essentials

- |    |   |   |
|----|---|---|
| 1  |    | Organize for disaster resilience  |
| 2  |    | Identify, understand and use current and future risk scenarios                              |
| 3  |    | Strengthen financial capacity for resilience  |
| 4  |    | Pursue resilient urban development and design   |
| 5  |    | Safeguard natural buffers to enhance the protective functions offered by natural ecosystems |
| 6  |    | Strengthen institutional capacity for resilience  |
| 7  |    | Understand and strengthen societal capacity for resilience                                  |
| 8  |    | Increase infrastructure resilience  |
| 9  |   | Ensure effective disaster response  |
| 10 |  | Expedite recovery and build back better   |



# How The Ten Essentials Apply

1		<b>Organize for disaster resilience</b>	<ul style="list-style-type: none"> <li>Multi-disciplinary focus within City</li> <li>Coordination with communities</li> <li>Coordination with other stakeholders.</li> </ul>
2		<b>Identify, understand and use current and future risk scenarios</b>	
3		<b>Strengthen financial capacity for resilience</b>	<ul style="list-style-type: none"> <li>Financial risk analysis – monetize potential event impacts</li> <li>Community funding</li> </ul>
4		<b>Pursue resilient urban development and design</b>	<ul style="list-style-type: none"> <li>Lay-out and design of City</li> <li>Application of building codes as required by risks in #2.</li> <li>Incorporation of resiliency into master plans</li> <li>Hazard exposure and vulnerability</li> <li>Up to date review of data and acute &amp; chronic threats / perils</li> </ul>
5		<b>Safeguard natural buffers to enhance the protective functions offered by natural ecosystems</b>	<ul style="list-style-type: none"> <li>Preservation of natural features that may help protect the base and the region</li> </ul>
6		<b>Strengthen institutional capacity for resilience</b>	<ul style="list-style-type: none"> <li>Skills and training for disaster response</li> <li>Regional aspects</li> <li>Data and metrics</li> </ul>
7		<b>Understand and strengthen societal capacity for resilience</b>	<ul style="list-style-type: none"> <li>Awareness of all residents and organizations</li> <li>Using training as a channel to the community</li> </ul>
8		<b>Increase infrastructure resilience</b>	<ul style="list-style-type: none"> <li>Exposure and vulnerability of all key systems</li> <li>Asset interdependencies – plan for failure chains</li> <li>Response capabilities</li> <li>Resilience upgrades</li> </ul>
9		<b>Ensure effective disaster response</b>	<ul style="list-style-type: none"> <li>Disaster planning, rehearsals with community engagement</li> <li>Response capabilities based on likely need.</li> <li>Regional capabilities</li> </ul>
10		<b>Expedite recovery and build back better</b>	<ul style="list-style-type: none"> <li>Enhanced capabilities for post event recovery – plans, triage strategies, post event organizations...</li> </ul>



# Extract from the Scorecard – Essential 1

Subject/Issue	Item measured	Indicative Measurement	Indicative Measurement Scale	Comments
1.1 Organization and coordination	1.1.1 Co-ordination of all relevant <u>pre-event</u> planning and preparation activities exists for the city's area, with clarity of roles and accountability across all relevant organizations.	<p>Presence of organizational chart documenting structure and role definitions at each relevant agency to achieve a single overall point of co-ordination.</p> <p>Structure agreed and preferably signed off by all participants via MOU or similar.</p>	<p>5 – Single point of coordination exists with agreed roles and responsibilities.</p> <p>4 – Single point exists but with some minor exceptions.</p> <p>3 – Single point exists in principle, but with some major omissions, or lack of agreement on some major areas.</p> <p>2 – Initial steps taken to create a single point of coordination.</p> <p>1 – No single point but plans exist to create one.</p> <p>0 – No single point and no plans to create one.</p>	<p>The single point of co-ordination may be a person, or a group or committee (with sub-groups or committees as appropriate). It will coordinate the relevant (see below) activities of:</p> <ul style="list-style-type: none"> <li>- The city government and, if separate, highways, police, armed forces/civil defense, water, energy, or any other relevant city organizations);</li> <li>- Other tiers of government (eg state, ward-level) or neighboring municipalities);</li> <li>- Private sectors organizations with relevant roles – for example, utilities, phone companies, healthcare, logistics companies, fuel depots, property companies, and so on.</li> </ul> <p>Some cities may have different organizational arrangements for different types of disaster. However, these need at least to work through the same coordination point (person or committee) to ensure consistency in response arrangements; and also to enable management of simultaneous disasters as applicable.</p> <p>The test of relevance is whether the organization or activity must contribute in any way to preparing for the event scenarios covered below in Essential 2.</p>
	1.1.2 Coordination of all relevant <u>event response</u> activities in the city's area, with clarity of roles and	Presence of organizational chart documenting structure and role definitions at each relevant	5 – Single point of coordination exists with agreed roles and responsibilities.	As above – the single point may be a person or a group.

There are 81 measurements in the Scorecard

# The Disaster Resilience Scorecard...



## Essential 10: Expedite Recovery and Build Back Better

Subject/Issue	Item measured	Indicative Measurement	Indicative Measurement Scale
10.1 Post event recovery planning – pre event!	10.1.1 Planning for post event recovery and economic reboot.	Existence of comprehensive post event recovery and economic reboot plans.	<p>5 – Fully comprehensive plans exist addressing economic, infrastructure and community needs after “most probable” and “most severe” scenario.</p> <p>4 – Fully comprehensive plans exist addressing economic, infrastructure and community needs after “most probable” scenario.</p> <p>3 – Plans exist for post “most probable” event but with some shortfalls.</p> <p>2 – Plans exist for post “most probable” event but with more significant shortfalls</p> <p>1 – Plans exist for post “most probable” event but with generalized inadequacy.</p> <p>0 – No plan.</p>
	10.1.2 Shadow financial arrangements for processing incoming aid and disbursing funds.	Post event arrangements exist for dealing with incoming financial aid and disbursements	<p>5 – Arrangements exist and are believed to be workable.</p> <p>4 – Arrangements have some minor gaps but are believed to be workable.</p> <p>3 – Arrangements have one or more significant gaps that may compromise aspects of workability.</p> <p>2 – Arrangements have more significant shortfalls that place overall workability in doubt.</p> <p>1 – Partial or incomplete arrangements only. Unlikely to be workable.</p> <p>0 – No plan.</p>

# The Scorecard – key points (1)

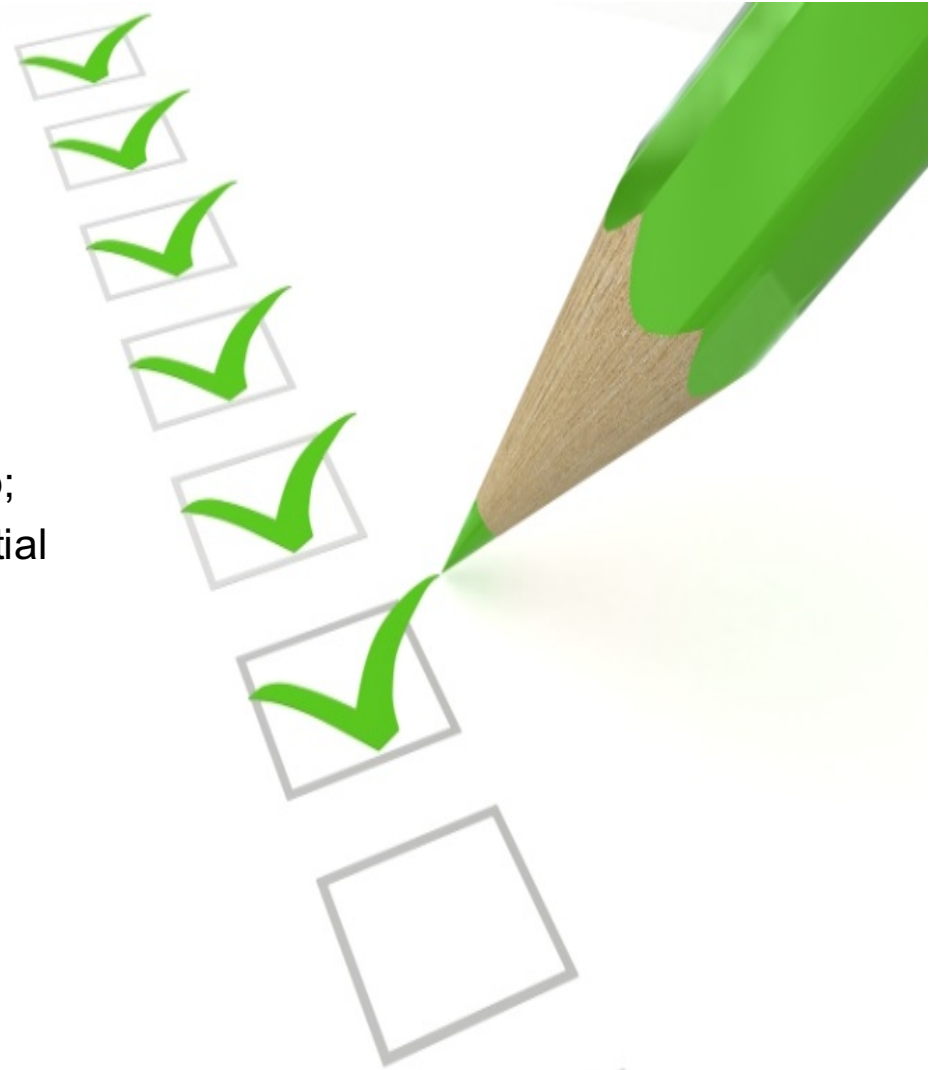
- “Resilience” is a large – and growing – concept, variously including environmental, economic, social and other forms of resilience as well as disaster resilience. The Scorecard is focused on disaster resilience, and on those other forms of resilience *to the extent that* they affect disaster resilience.
- The Scorecard is intended to help cities understand all the elements of their disaster resilience positioning, frame a plan of action to prioritize investments and benefits, and then track progress. As Donald Rumsfeld might have put it, it’s about initiating a progression from:
  - “Unknown unknowns” to “known unknowns”;
  - “Known unknowns to “known knowns” – the baseline which captures your position today;
  - “Known knowns” to *action* and *mitigation*.
    - In cases where the action is not within your control, from “known knowns” to discussion and advocacy with the other organizations involved.
- The scorecard is free for anyone to use, for non-profit or for-profit purposes.

# The Scorecard – key points (2)

- As a baselining instrument, the scorecard is NOT intended for benchmarking between communities.
- The scorecard is deliberately pitched as a “counsel of perfection”. NO installation or community in the world would get a perfect score - or probably even come close.
- In the “raw” scorecard as published, all assessments count equal. In practice, we have developed a weighting to capture where an issue is of particular importance.
- Because the Scorecard is free to use, we are not necessarily aware of all implementations of it. However, we estimate - very informally - that by the end of 2015 some 40+ cities and communities, across every continent, will have used it in some fashion.
- Notre Dame Global Adaptation Index 2015 Prize Awarded to AECOM and IBM for Disaster Resilience Scorecard development.

# Applying the Scorecard

- The typical process.
- Alternative approaches:
  - The 'light touch' – one-day workshop;
  - Two-day workshop, supported by initial questionnaire and interviews;
  - Multi-week detailed assessment.
- Integration with Hazard Mitigation Planning.



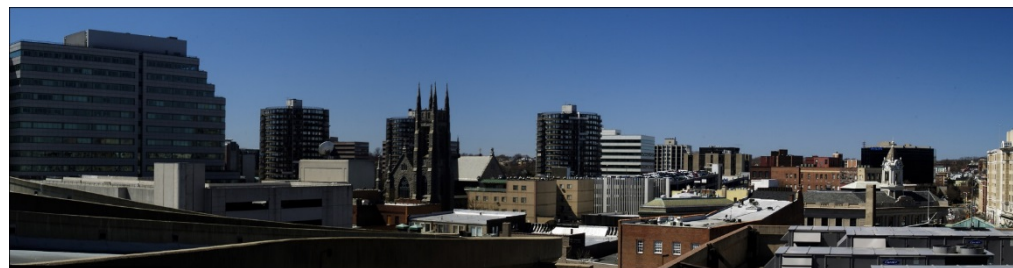
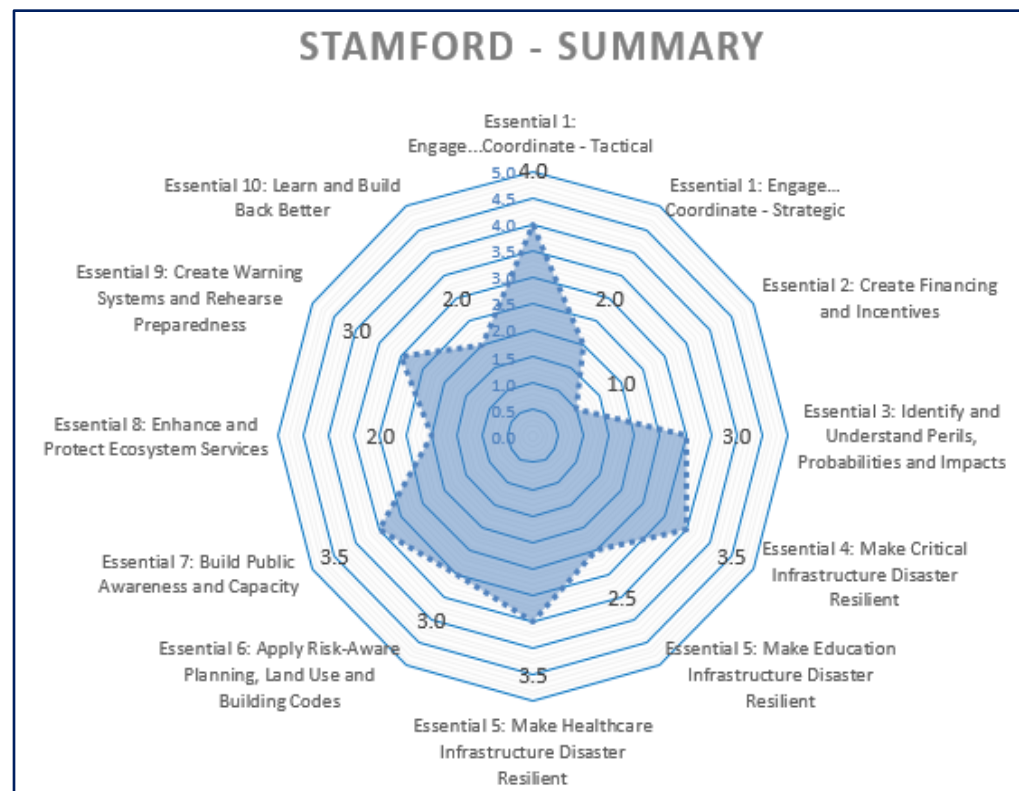
# The Typical Process



# The Light Touch

- A tool for engaging stakeholders.
- Example - Stamford, CT:
  - One-day workshop – initiated by the Mayor at the request of Stamford 2030 - a local business/civic group.
  - Focus on the 10 Essentials – use the detailed assessments in the Scorecard as discussion prompts only.
  - Scores for each Essential only, based on group consensus.
  - Initial identification of areas warranting further investigation and coordination.
  - Likely to be followed up with Detailed Assessment performed by university post-grad students.

*Note: the Stamford work used the older version of the Essentials and Scorecard; and some Essentials (for example, Essentials 1 and 5) were given split scores.*



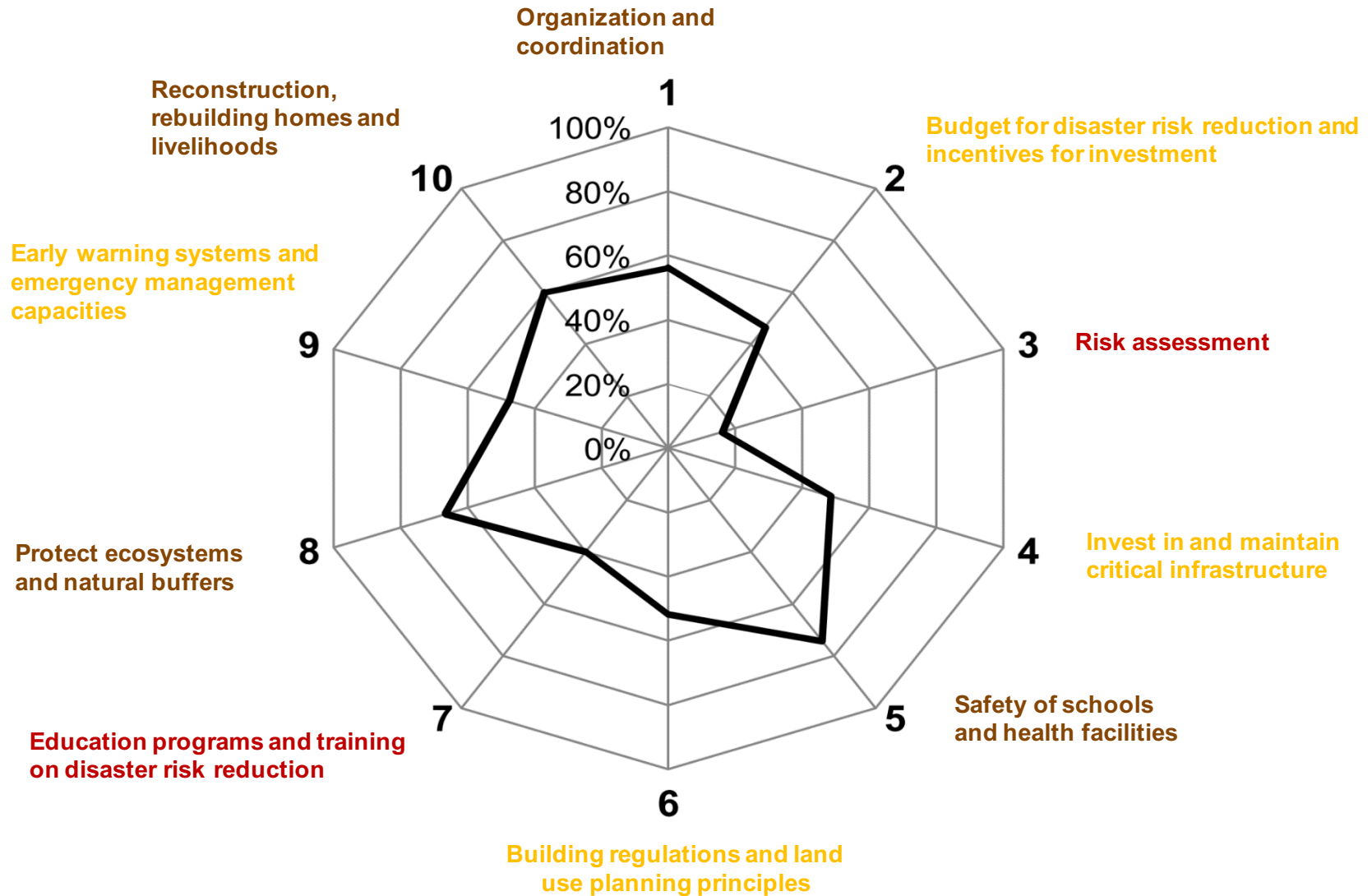


# Two-day Workshop

- Two-day workshop with questionnaire and some interviews in advance
- Examples: Coimbatore (India); Makati (Philippines) and Bandung (Indonesia)
  - Multiple stakeholders in attendance
  - Exploring all indicators
  - Launching action with partners
  - Determining areas of relative strength and those requiring greatest focus for improvement



# Bandung, Indonesia - Summary



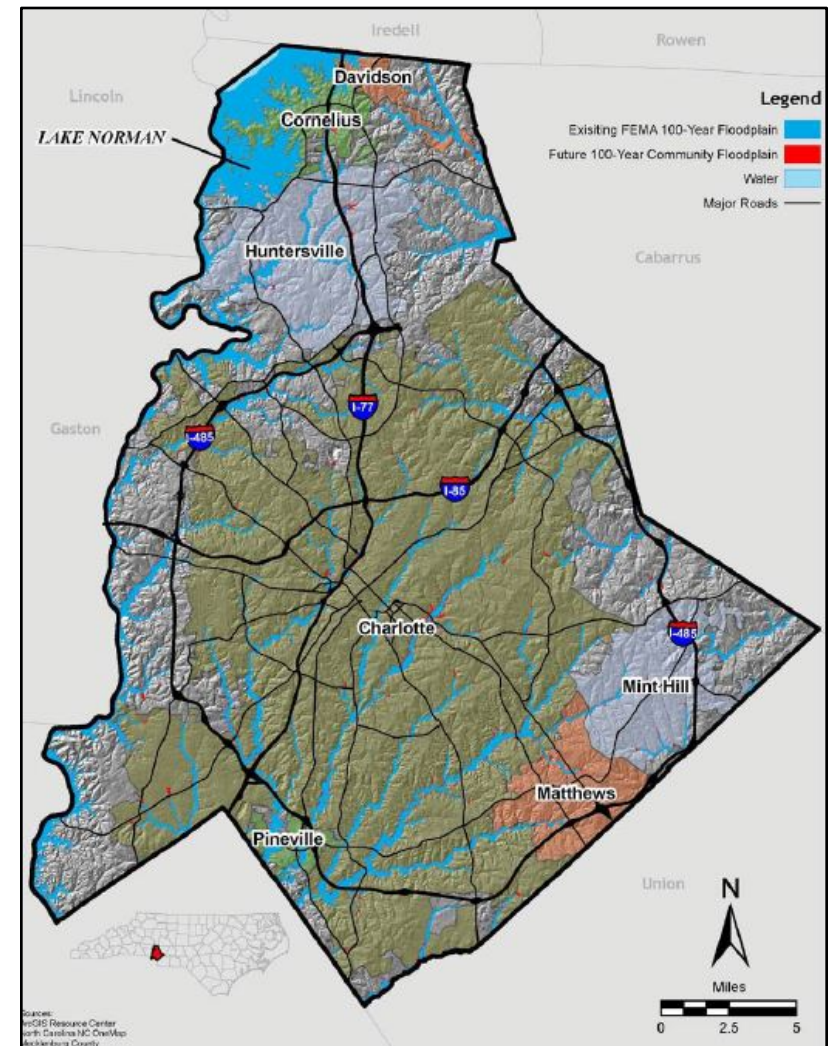
# Detailed Assessment

- Scorecard application completed in five European Cities: Salford & Stoke-on-Trent (UK), Jonkoping & Arvika (Sweden), Amadora (Portugal).
- High profile: Salford project was run by full-time senior government officer, a local police Superintendent (UK police are designated first responders).
- Interviews, questionnaires, documentary review, some site visits: will take some weeks to execute.
- Result will be a detailed disaster resilience blueprint with scores that will allow process specifically to be tracked.
- Funded by the EU – results used for further grant applications.
- Townsville, Australia, also has a Detailed Assessment in progress



# Integration with Hazard Mitigation Planning

- City of Charlotte / Mecklenburg County, NC USA
- Integration of HMP update and Scorecard
- Focus on all indicators for 7 communities
- Identification of areas warranting further investigation
- Communicating value in aligning the processes



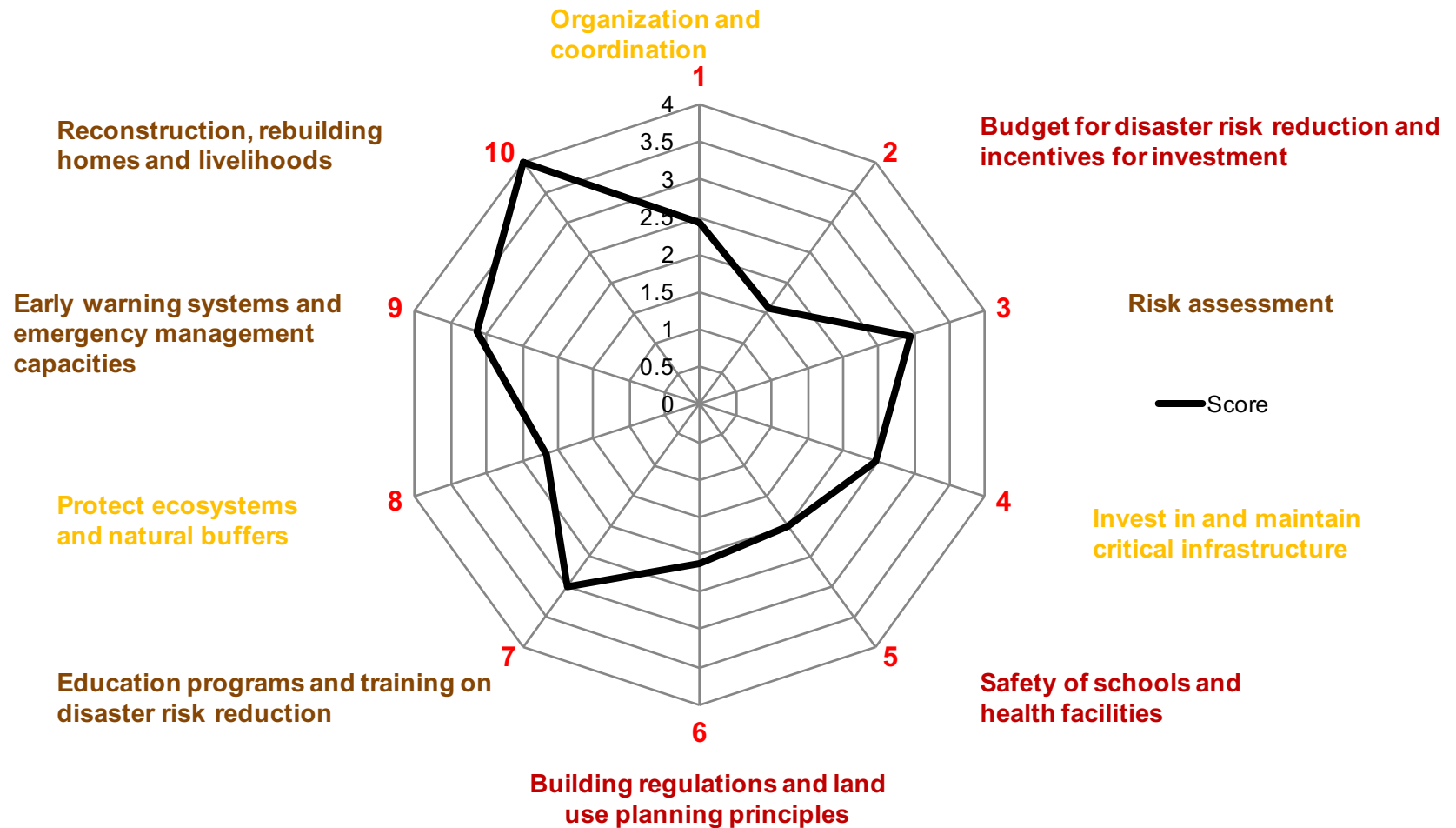


# Hazard Mitigation Planning cont.

UNISDR 10 Essentials	Component in HMP		
<b>Essential 1: Engage, Share Understanding and Coordinate</b>	<ul style="list-style-type: none"> <li>• Capability assessment</li> <li>• Public involvement</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigation action plan</li> </ul>	<ul style="list-style-type: none"> <li>• Plan review, approval, adoption</li> </ul>
<b>Essential 2: Create Financing and Incentives</b>	<ul style="list-style-type: none"> <li>• Capability assessment</li> <li>• Mitigation strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigation action plan</li> </ul>	
<b>Essential 3: Identify and Understand Perils, Probabilities and Impacts</b>	<ul style="list-style-type: none"> <li>• Community profile</li> <li>• Risk assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Public engagement</li> <li>• Planning process</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigation strategy</li> <li>• Mitigation action plan</li> </ul>
<b>Essential 4: Make Critical Infrastructure Disaster Resilient</b>	<ul style="list-style-type: none"> <li>• Capability assessment</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigation action plan</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigation strategy</li> </ul>
<b>Essential 5: Make Education and Healthcare Infrastructure Disaster Resilient</b>	<ul style="list-style-type: none"> <li>• Community profile</li> </ul>	<ul style="list-style-type: none"> <li>• Risk assessment</li> </ul>	
<b>Essential 6: Apply Risk-Aware Planning, Land-Use and Building Codes</b>	<ul style="list-style-type: none"> <li>• Planning process</li> </ul>	<ul style="list-style-type: none"> <li>• Community profile</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigation strategy</li> </ul>
<b>Essential 7: Build Public Awareness and Capacity</b>	<ul style="list-style-type: none"> <li>• Community profile</li> </ul>	<ul style="list-style-type: none"> <li>• Public engagement</li> </ul>	
<b>Essential 8: Enhance and Protect Ecosystem Services</b>	<ul style="list-style-type: none"> <li>• Risk assessment</li> <li>• Planning</li> </ul>	<ul style="list-style-type: none"> <li>• Capability assessment</li> <li>• Mitigation strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigation action plan</li> </ul>
<b>Essential 9: Create Warning Systems and Rehearse Preparedness</b>	<ul style="list-style-type: none"> <li>• Capability assessment</li> <li>• Public engagement</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigation strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Mitigation action plan</li> </ul>
<b>Essential 10: Learn and Build Back Better</b>	<ul style="list-style-type: none"> <li>• Capability assessment</li> <li>• Public engagement</li> </ul>	<ul style="list-style-type: none"> <li>• Community profile</li> </ul>	<ul style="list-style-type: none"> <li>• Public education</li> </ul>

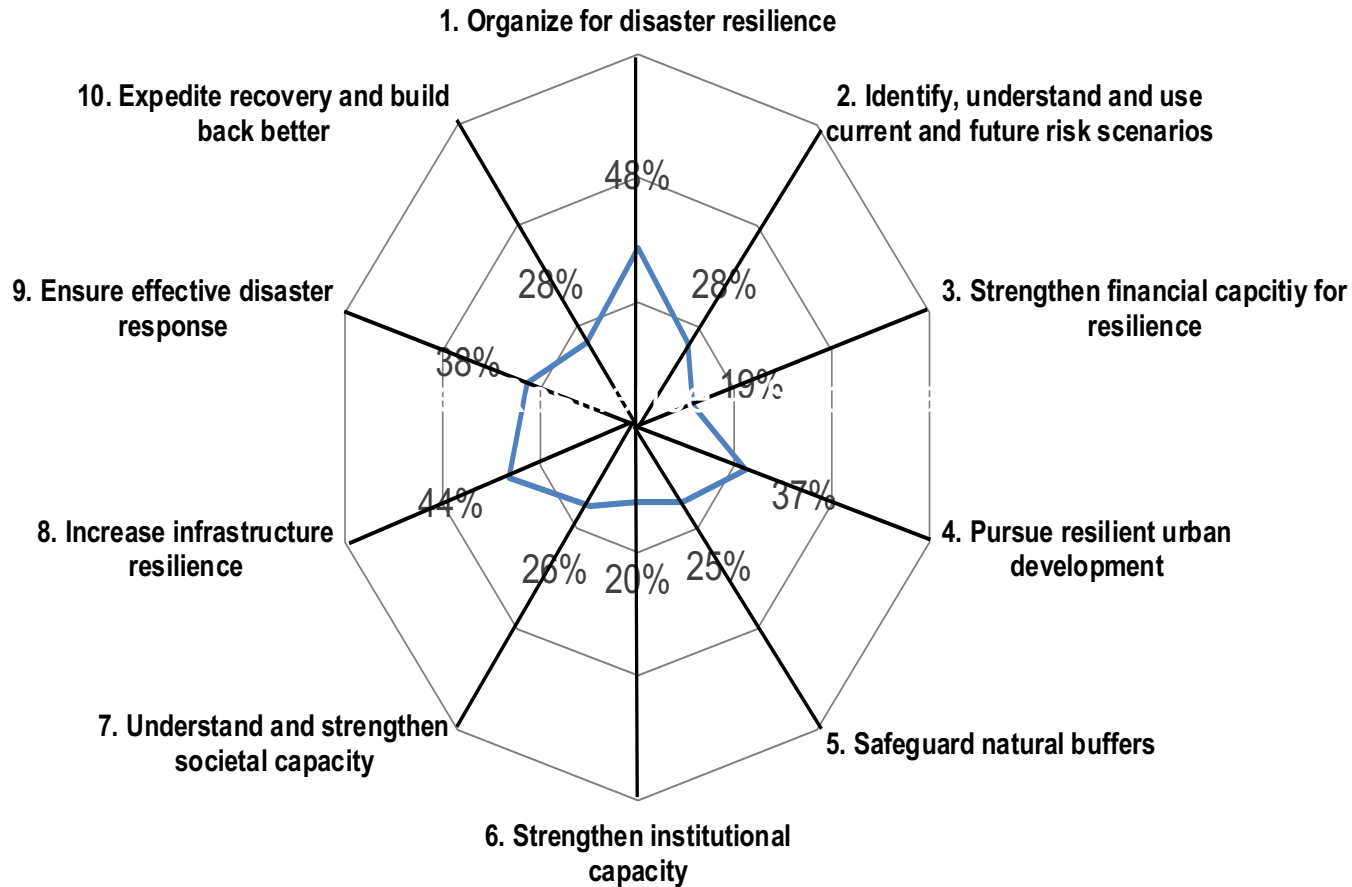
*Note: this work used an older version of the Essentials and Scorecard.*

# Da Nang, Viet Nam - Summary



# Puerto Montt , Chile - Summary

## Puerto Montt UN ISDR "Ten Essentials"





# Summary

- Essential to Scorecard application is development of scenarios which may occur.
- A multi-dimensional tool for convening cross functional stakeholders to baseline a community's disaster resilience; developing priorities to improve resilience; and tracking progress.
- Likely to have been used in some fashion by 40+ cities worldwide by the end of 2015.
- An effective means of stakeholder engagement.
- Priorities clarified to develop a 1-, 3-, 5-year Resilience Plan
- Flexible in its application – delivers real value even with a one day workshop.
- Can be linked to other emergency management approaches.



# The Sendai Framework

2015 - 2030

# United Nations Leadership Through The Years

**The [1st] World Conference on Natural Disaster Reduction**  
*Yokohama, Japan, 1994.*

Yokohama Strategy  
and Plan of Action  
for a Safer World

**The [2nd] World Conference on Disaster Reduction**  
*Kobe, Japan, 2005.*

Hyogo Framework  
for Action  
2005-2015:  
Building the  
resilience of nations  
and communities  
to disasters

**The Third UN World Conference on Disaster Risk Reduction**  
*Sendai, Japan, 2015*

Sendai  
Framework for  
Disaster Risk  
Reduction  
2015-2030

# The Sendai Framework: 2015-2030

- Sendai Framework for Disaster Risk Reduction was adopted by 187 Member States at the Third UN World Conference on Disaster Risk Reduction 3/18/2015
- A 15 year voluntary, non-binding agreement that succeeds the Hyogo Framework for Action 2005-15
- The Sendai Framework was endorsed by the UN General Assembly 6/3/2015
- The Goal is to prevent new and reduce existing risk and to strengthen resilience to natural and man-made hazards in order to achieve substantial reductions in disaster losses
- The Framework recognizes the primary role of States, and shared responsibility of local government, private sector, civil society organizations to achieve this goal



# Sendai Framework: One Goal – Four Priorities

## GOAL

Prevent new & reduce existing risk, and to strengthen resilience to natural and man-made hazards...to achieve substantial reductions in disaster losses

## FOUR PRIORITIES:

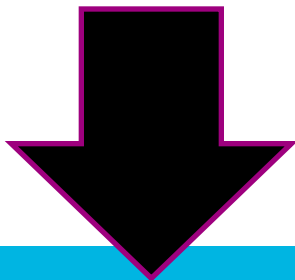
1. **Understand** Disaster Risk
2. **Strengthen** disaster risk governance to manage risk
3. **Invest** in DRR for Resilience
4. **Enhance** preparedness for effective response and “Build Back Better”



## Sendai Framework For DRR: 7 Targets 2015-2030

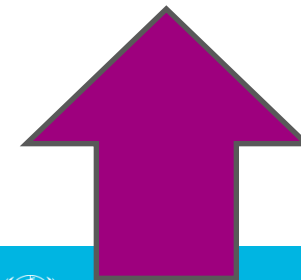
### Substantially Reduce

- Global disaster mortality
- Numbers of affected people
- Economic losses in relation to global GDP
- Disaster damage to critical infrastructure & disruption of basic services



### Substantially Increase

- Number of countries with national & local DRR strategies by 2020
- International Cooperation to developing countries
- Access to multi-hazard early warning systems and disaster risk information and assessments





## Sendai Framework Has 33 References to the Private Sector



“ Economic losses from disasters are out of control and can only be reduced with collaboration with the private sector

*Ban Ki-Moon  
Secretary General of  
the United Nations*



## UNISDR & Sendai Framework Role of Private Sector

**“Business, professional associations and private sector financial institutions** including financial regulators and accounting bodies, as well as philanthropic foundations, to:

- **Integrate DRM** including business continuity, into business models and practices via disaster risk-informed investments, especially in MSMEs
- **Engage in awareness** raising and training for their employees and customers;
- **Engage in and support research and innovation** as well as technological development for DRM;
- **Share and disseminate knowledge**, practices and non-sensitive data; and
- **Actively participate**, as appropriate and under the guidance of the public sector, **in the development of normative frameworks** and technical standards that incorporate disaster risk management”

## Private Sector Alignment to Sendai: *ARISE*

### **The Mission of ARISE:**

To create risk resilient societies by energizing the private sector in collaboration with the public sector, and other stakeholders, to achieve the outcome and goal of the Sendai Framework for Disaster Risk Reduction in a transparent and inclusive way that delivers local and measurable impact.

### **Private Sector Commitments:**

- Raise Awareness
- Leverage Influence
- Be a Catalysis
- Assist Implementation



## Private Sector Alignment to Sendai: ARISE

### **Seven Work Streams with Key Performance Indicators:**

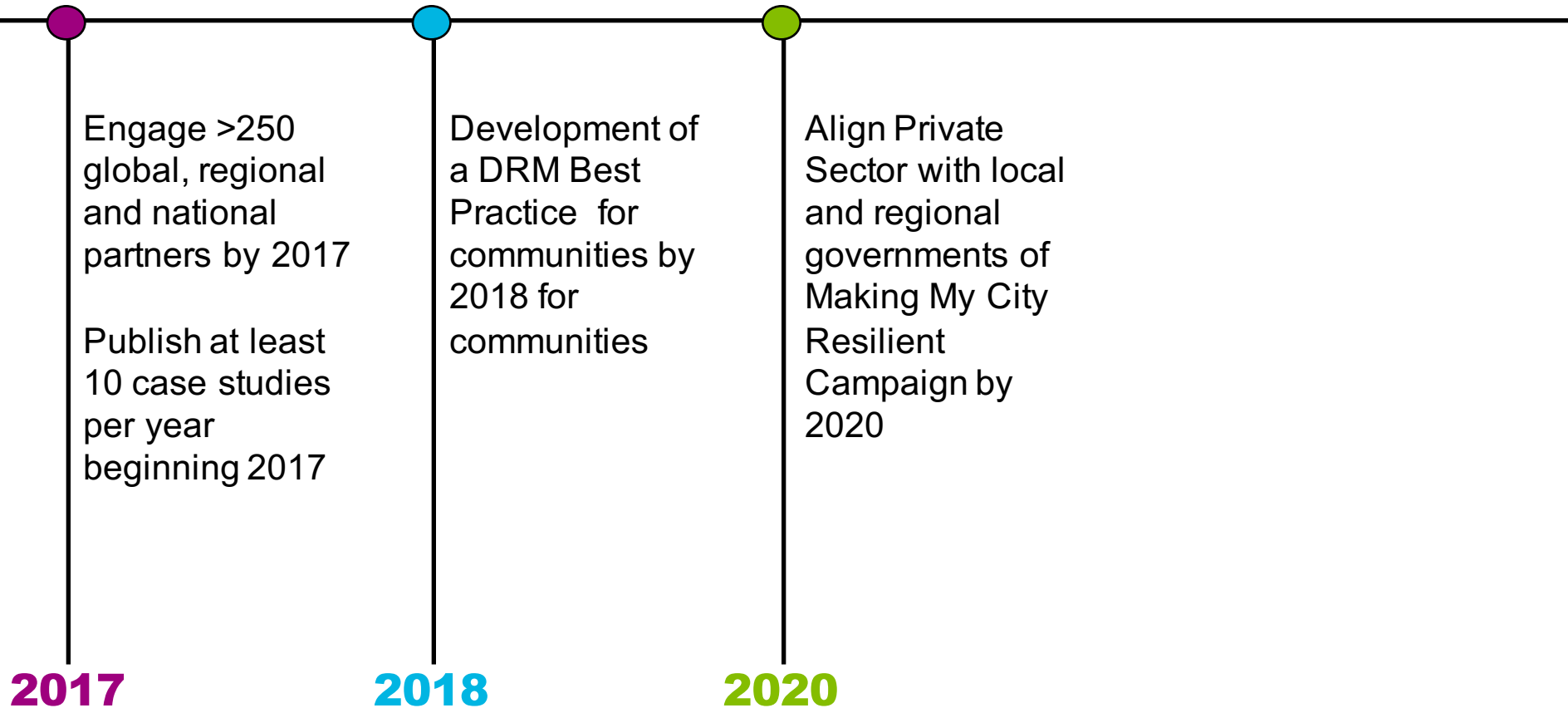
1. Disaster Risk Management Strategies
2. Investment Metrics for DRR
3. Benchmarking and Standards
4. Education and Training
5. Legal and Regulatory Actions
6. Urban Risk Reductions and Resilience
7. Insurance



# Appendix 1: Seven Work Streams of ARISE

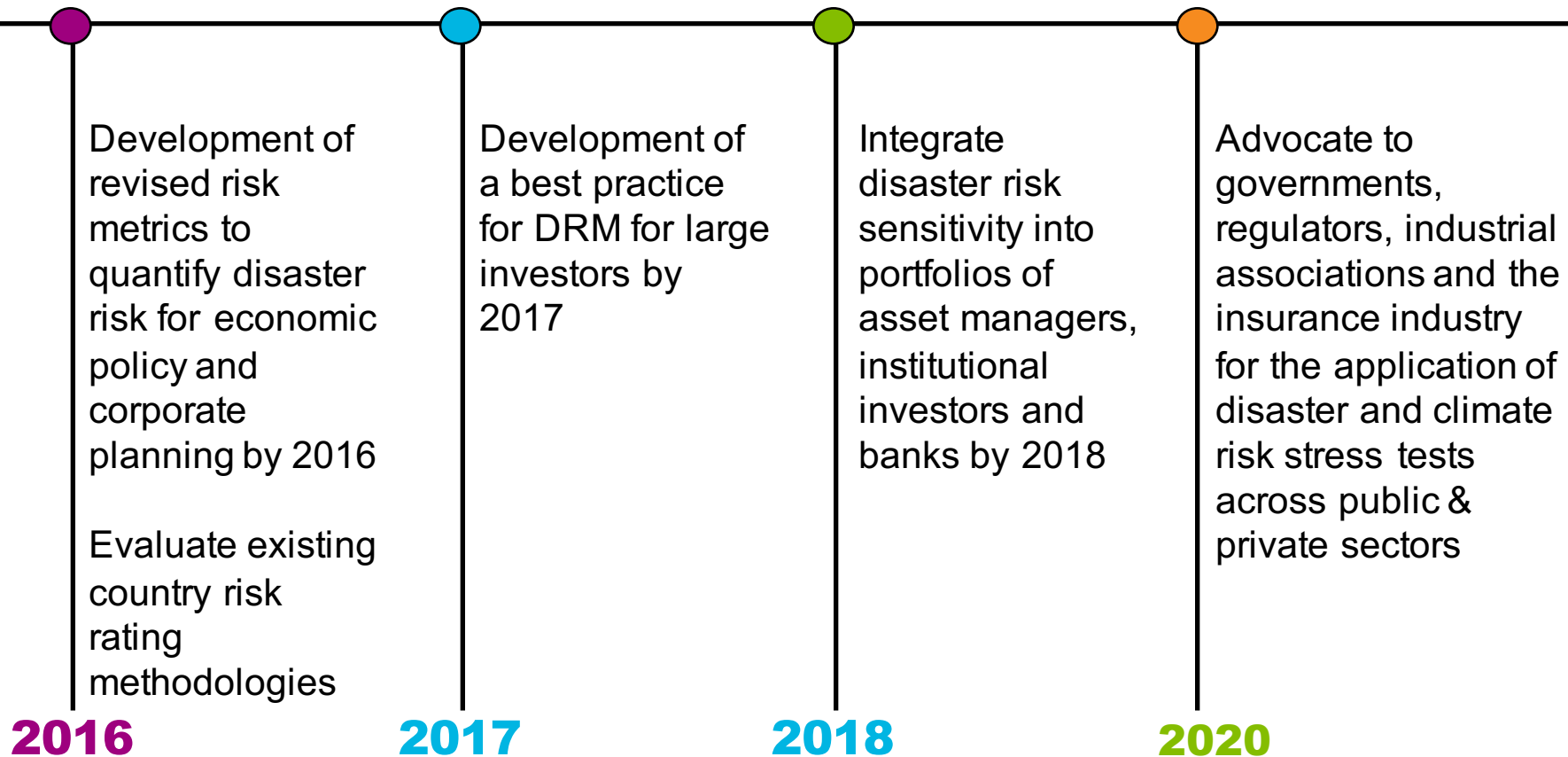
## Seven Work Streams of ARISE

### 1. Disaster Risk Management Strategies



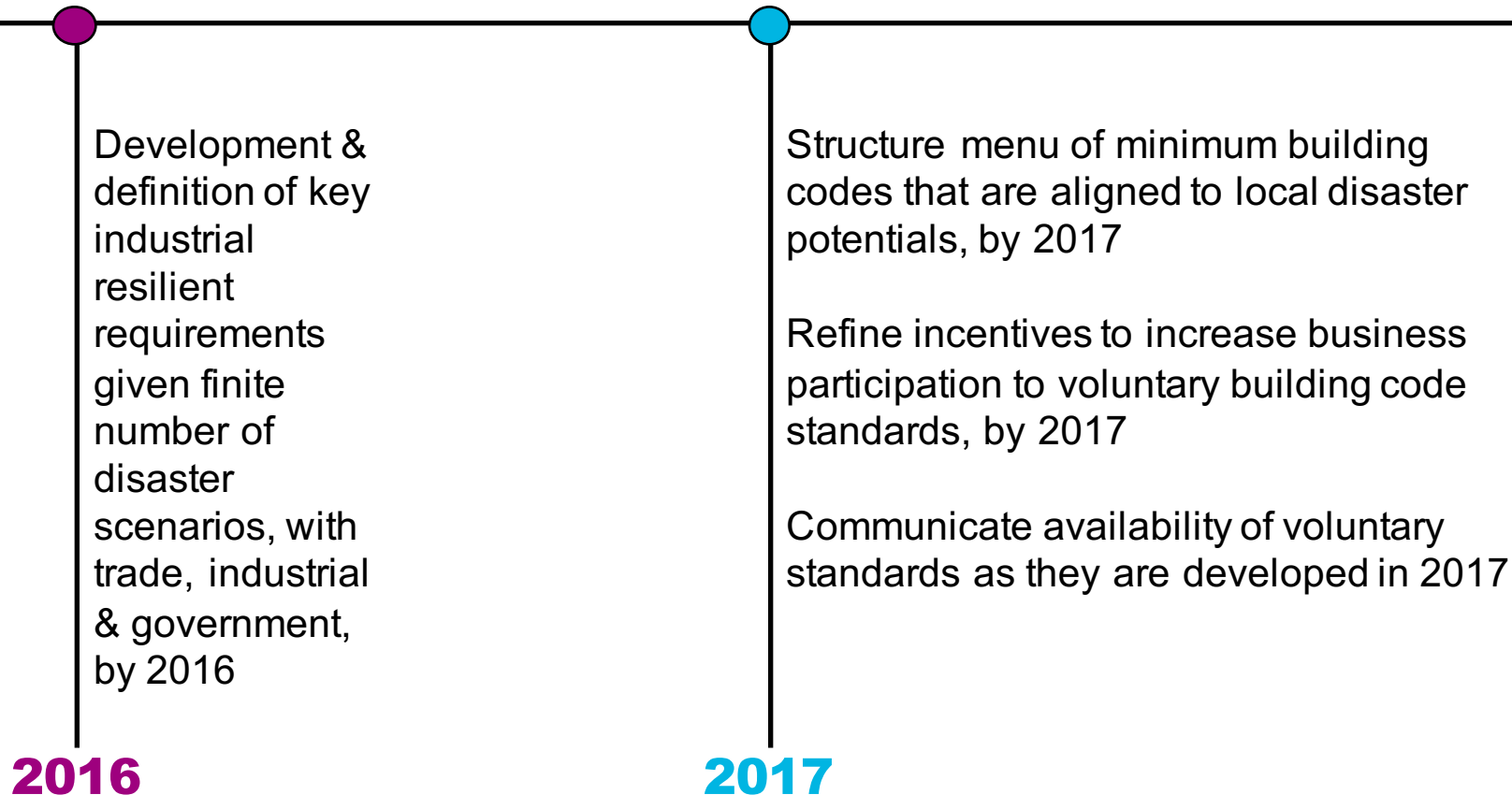
## Seven Work Streams of ARISE

### 2. Investment Metrics



## Seven Work Streams of ARISE

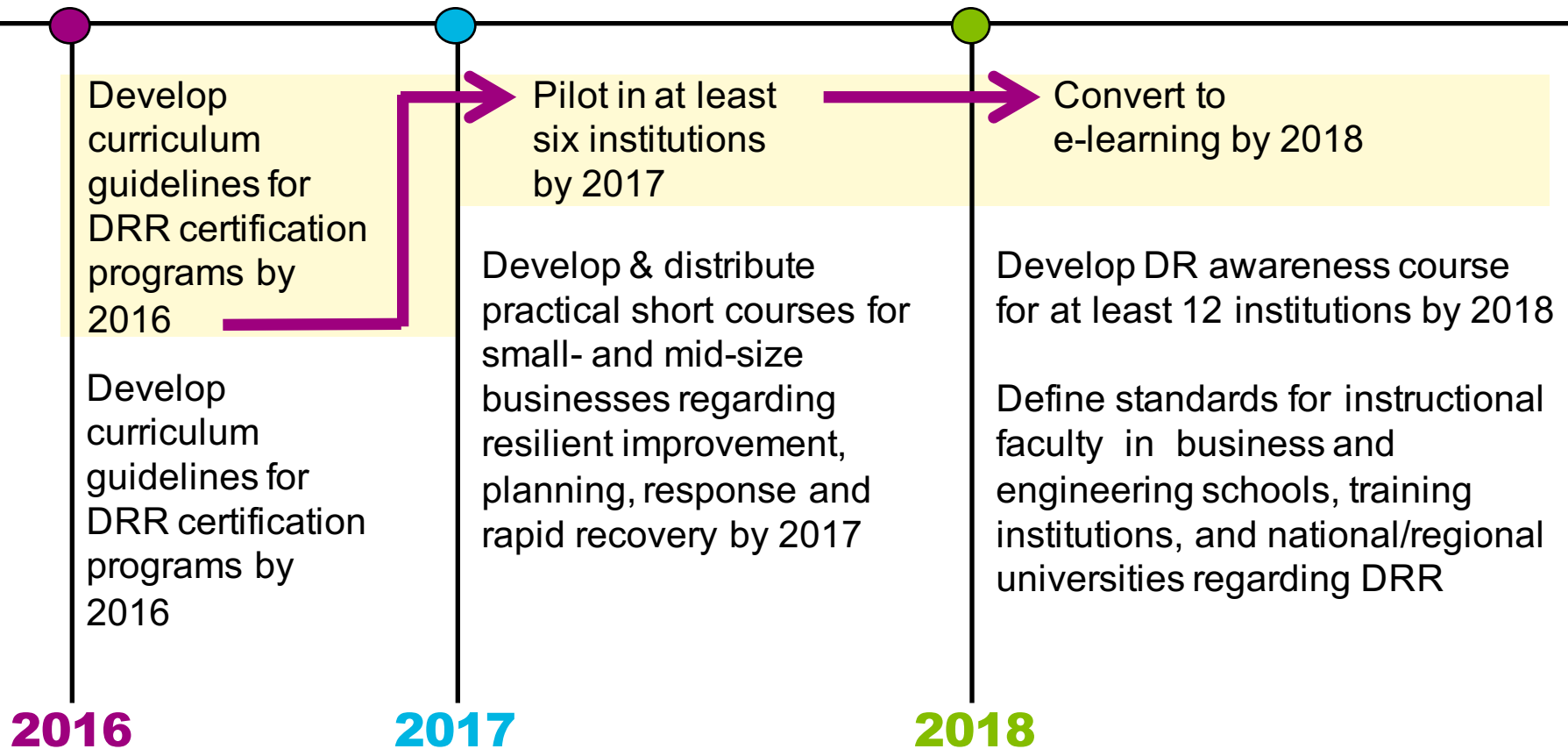
### 3. Benchmarking & Standards





## Seven Work Streams of ARISE

### 4. Education & Training



## Seven Work Streams of ARISE

### 5. Legal & Regulatory

Develop and test a risk ranking tool that may be used by regulators to gauge risk exposure and vulnerability to natural disasters by 2016

Identify resilience as a critical factor in the financial stability of economies and private sector business enterprises, by 2016

2016

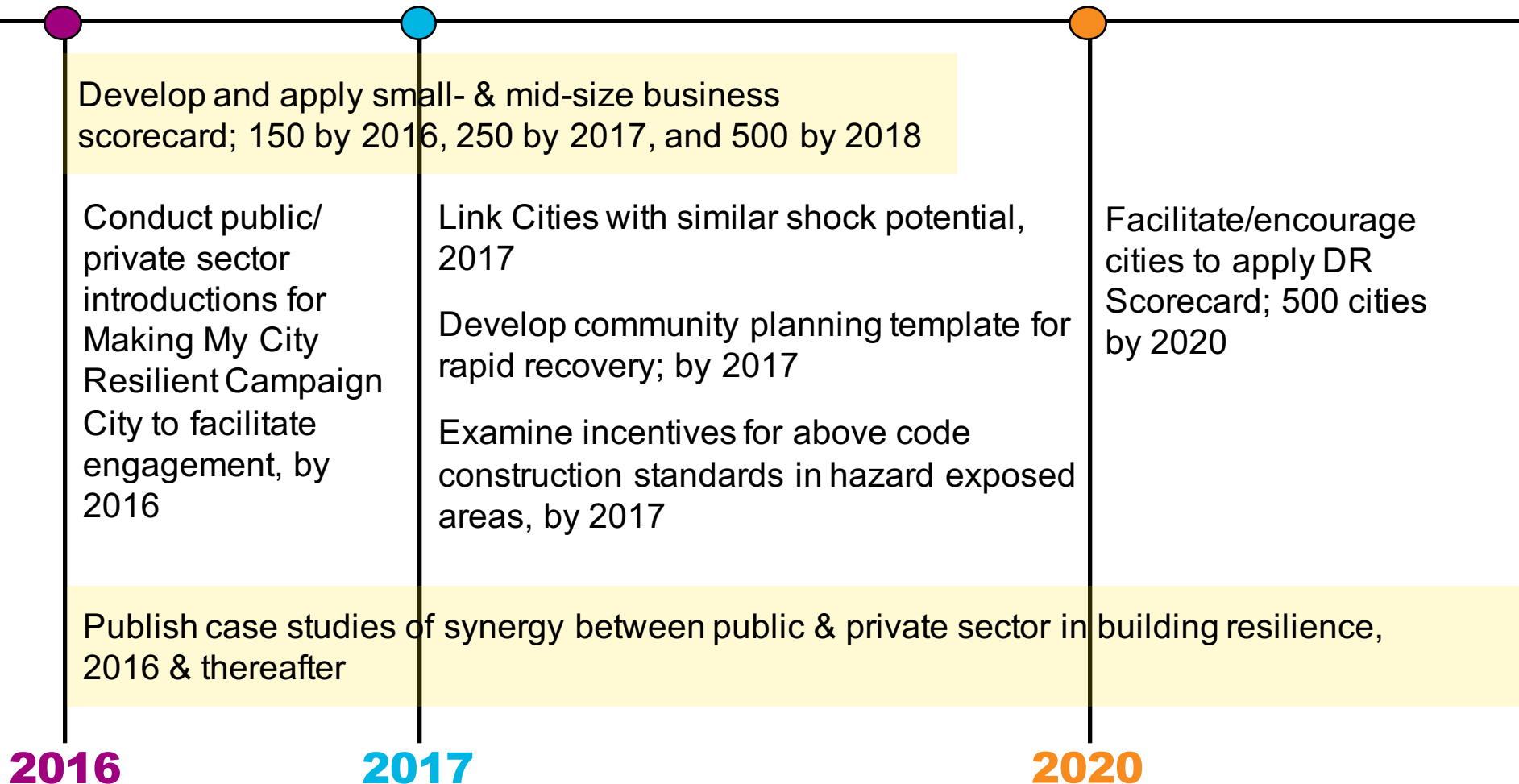
Work with regulators to advocate for implementation of the risk rating system for DR exposure assessment in the cost of capital, and cost of insurance, to allow those entities with enhanced resilience to borrow at lower interest rates as well as to receive lower insurance premiums, by 2017

Review existing codes and standards in selected sectors, reporting and accounting protocols; development of key principles for voluntary risk disclosure, risk sensitive investment and monitoring develop tools for DR transparency

2017

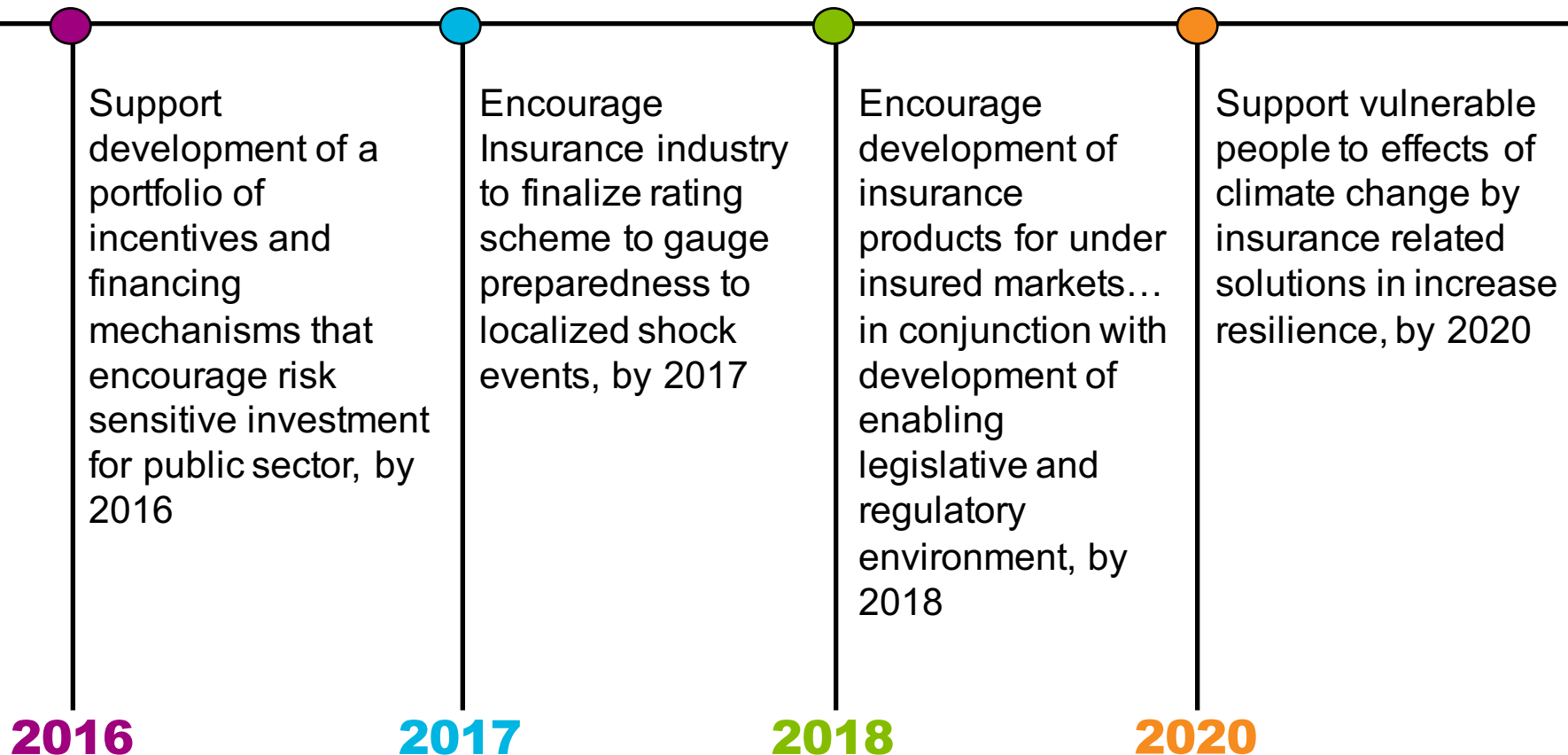
## Seven Work Streams of ARISE

### 6. Urban Risk Reduction & Resilience



## Seven Work Streams of ARISE

### 7. Insurance





# Thank You!

Dale Sands

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