Developing Frameworks to Support Resiliency Assessments

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Infrastructure is a Critical Contributor to Community Resiliency

Resiliency assessments must be done from a *systems* view

50,000 Foot View of Resilience Analytical Approaches and Tools

- There is an extensive literature on assessing resiliency and the role infrastructure plays in it.

- Different approaches are used to collect data:
  - Detailed site surveys
  - Self-assessments
  - Open data sources

- The approaches support different analytical contexts:
  - Vulnerability assessments to threats and hazards
  - "What if" assessments of different actions
  - Internal investment decisions by owner/operators
  - External investment decisions by non-governmental organizations and donor countries

50,000 Foot View of Resilience Analytical Approaches and Tools (Cont.)

- The data collected should be metrics that can:
  - Give the state of resiliency at any moment
  - Demonstrate progress in meeting stated goals
  - Provide a common understanding for multiple audiences

- The data need to be time sensitive to represent processes that operate over different time-lines.

- The approaches used need to be able to assess what is required to <u>build</u> and <u>maintain</u> resiliency.

Examples of Resilience Frameworks, Tools, Approaches, or Activities (Not an Exhaustive List!!)

Resilience Assessment Frameworks and Tools

- Infrastructure Survey Tool Dashboard (DHS)
- Community Assessment of Resilience Tool (START)
- Resiliency Analysis Support System (Argonne)
- Community Resilience System (CARRI)
- T*H*R*I*V*E (Prevention Institute)
- Disaster Risk Index (Peduzzi)
- Community Disaster Resilience Index (Peacock)
- …

Examples of Resilience Frameworks, Tools, Approaches, or Activities (Not an Exhaustive List!!)
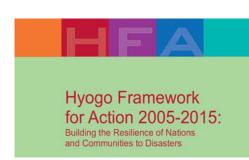
Resilience Assessment Approaches

- Hyogo Framework for Action (UN)
- United Nations International Strategy for Disaster Reduction Disaster Resilience Scorecard
- Rockefeller Foundation 100 Resilient Cities
- World Bank World Development Indicators
- United Nations Human Development Index Program
- …

Hyogo Framework for Action (HFA)

- The Hyogo Framework for Action is a UN activity with a goal of assisting countries in developing and implementing plans to reduce risks to natural disasters and climate change.

- Self-assessments are made by each country to measure progress against 5 priorities (paraphrased):
  - Prioritize risk reduction.
  - Identify, assess and monitor risks and enhance early warning.
  - Develop a culture of safety and resilience.
  - Reduce underlying risk factors.
  - Strengthen preparedness for effective response.

- The HFA focuses more on organizational issues.

- Roles for infrastructure are implied, but no explicit evaluation of infrastructure elements are included.

UNISDR Disaster Resilience Scorecard

- Being used by cities and/or regions to assess their resilience to natural disasters and to assist in resource planning.
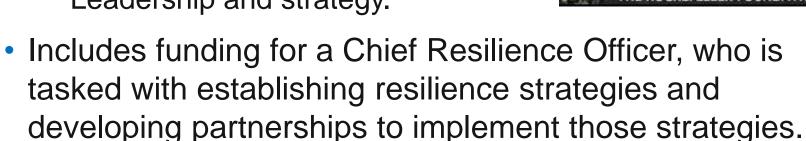
- Provides 85 indicators to determine baseline measures of resilience, identify priorities, and track progress over time.

- The scorecard focuses more on organizational issues and the development of response plans.

- Roles for infrastructure are implied, but no explicit evaluation of infrastructure elements are included.

Rockefeller Foundation 100 Resilient Cities

- Provides funding assistance and guidance
  for urban resilience development in:
  - Health and well-being.
  - Economy and society.
  - Infrastructure and environment.
  - Leadership and strategy.

- Includes funding for a Chief Resilience Officer, who is tasked with establishing resilience strategies and developing partnerships to implement those strategies.

- 66 cities have been selected to-date.

Rockefeller Foundation 100 Resilient Cities (Cont.)

- Although it lacks metrics, it provides best practices and shared strategies in each category.

- The plans for each city are tailored to the goals and challenges each city has identified.

- There are no defined approaches for assessing infrastructure – tools are potentially available from the Rockefeller Partners.

World Bank World Development Indicators

- Cross-societal development indicators to assist researchers and donor countries in monitoring progress of countries toward ending poverty and promoting shared prosperity
  - 10 general topic areas.
  - 1,343 total indicators - 26 unique infrastructure indicators.
- The infrastructure indicators largely relate to development projects and investments
- Enables comparative analyses between countries and of countries over time (1960 – present)
- Although it provides high quality data, it does not provide any context of progress (or lack thereof)

Common Features, Characteristics, and Issues Over all of the Tools and Approaches

- The analysis contexts are different:
  - Internally focused (e.g., planners and governmental leaders)
  - Externally focused (e.g., developers and donor community)

- Many are stakeholder assessments – not metrics - representing their perception of how well they are doing and may mask inherent biases.

- The analyses are typically done on a city or regional basis, but disaster events do not "recognize" boundaries.

Common Features, Characteristics, and Issues Over all of the Tools and Approaches (Cont.)

- Many of the tools and approaches are intended to be for an "all hazards" assessments and event agnostic, but not all hazards can be responded to or mitigated against.

- Impacts from extreme "pulsed" events are considered, but some major hazards are slow moving (i.e., sea level rise from climate change) and not considered.

- Details about the existence of physical infrastructures are generally asked for, but not always the interdependencies and in particular, linkages with the social infrastructure.

Key Takeaways

- The role of critical infrastructure in Community Resiliency must be analyzed from a system-of-systems perspective – the interconnectedness of a community's structures can lead to unexpected feedback mechanisms and consequences.

- The state of resiliency in a community is measured by Indicators, but the effectiveness of the actions to change the level of resiliency is measured by metrics.

- Each available framework, tool, and approach offers pluses and minuses, but *there is no one size fits all solution.*

Got Resiliency?