BUILDING COMMUNITY RESILIENCE

...MAKING RESILIENCE THE NEW NORMAL

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National Association of Development Organizations

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Part I: Problem Statement

COSTS AND LOSSES FROM DISASTERS ARE ON THE RISE
OPEN FOR BUSINESS

“HUGO” KISS MY/GRITS

3 SHOPS
Cedar Rapids, Iowa 2008

Photo: Cedar Rapids, IA during the 2008 flooding
Source: AP photo/Jeff Robertson
Photo: Joplin, MO after the May 22, 2011 tornado
Source: Charlie Ridel/AP Photo

Resilient America

Joplin, Missouri 2012
EXTREME WEATHER COSTS IN US

FIGURE 1
Billions of dollars in damages from extreme weather events increasing in frequency, cost from 1980–2012

- Average total cost of billion-dollar-damage events per year (in billions of 2012 dollars)
- Average number of billion-dollar-damage events per year

Source: National Oceanic and Atmospheric Administration.
TABLE 1
Federal spending on disaster relief and recovery, 2011–2013

<table>
<thead>
<tr>
<th>Fiscal year appropriations or supplemental bill spending</th>
<th>Estimated disaster-relief spending (in millions of $)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY 2011</td>
<td>$21,376</td>
</tr>
<tr>
<td>FY 2012</td>
<td>$32,412</td>
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<tr>
<td>FY 2012 supplemental appropriations</td>
<td>$8,174</td>
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<tr>
<td>FY 2013</td>
<td>$14,321</td>
</tr>
<tr>
<td>FY 2013 Superstorm Sandy supplemental appropriations</td>
<td>$60,210</td>
</tr>
<tr>
<td>Total</td>
<td>$136,493</td>
</tr>
</tbody>
</table>

Notes: The Treasury Department has two disaster-related programs, but funding levels are unavailable. Figures are rounded. Sources: Annual department budget reports; appropriations and supplemental appropriations law. For more detail, see the attached spreadsheet.
There have been 2,049 federal disaster declarations since 1953. The average number of declarations per year is 34 from 1953-2010, though that few haven’t been recorded since 1995.

The number of federal disaster declarations set a new record in 2011, with 99, shattering 2010’s record 81 declarations.

The Number of Federal Disaster Declarations Is Rising and Set a New Record in 2011

The MOST EXPENSIVE US Floods are...

<table>
<thead>
<tr>
<th>EVENT</th>
<th>DATE</th>
<th>AMOUNT PAID</th>
</tr>
</thead>
<tbody>
<tr>
<td>HURRICANE KATRINA</td>
<td>August 2005</td>
<td>$16,280,949,239</td>
</tr>
<tr>
<td>SUPERSTORM SANDY</td>
<td>October 2012</td>
<td>$7,544,907,295</td>
</tr>
<tr>
<td>HURRICANE IKE</td>
<td>September 2008</td>
<td>$2,671,817,473</td>
</tr>
<tr>
<td>HURRICANE IVAN</td>
<td>September 2004</td>
<td>$1,607,508,098</td>
</tr>
<tr>
<td>HURRICANE IRENE</td>
<td>August 2011</td>
<td>$1,325,164,005</td>
</tr>
<tr>
<td>TROPICAL STORM ISAAC</td>
<td>August 2012</td>
<td>$540,095,685</td>
</tr>
<tr>
<td>HURRICANE ISABEL</td>
<td>September 2003</td>
<td>$493,383,587</td>
</tr>
<tr>
<td>HURRICANE RITA</td>
<td>September 2005</td>
<td>$473,604,029</td>
</tr>
<tr>
<td>TROPICAL STORM LEE</td>
<td>September 2011</td>
<td>$449,745,556</td>
</tr>
</tbody>
</table>

Source: FEMA, NFIP
THE PROBLEM, IN SHORT

- Number of events is rising
- Number of people at risk is rising
- Costs, losses, and damages from events are rising
Part II:

THE NATIONAL ACADEMY OF SCIENCES
Is a private, non-profit organization. The US National Academy of Sciences is the nation's pre-eminent source of independent, high-quality, objective advice on science, engineering, and health matters.
Resilience Decision Making: Many Roles

- Research and data used for projections
- Accuracy of data, analysis, information
- Application of research

- Policy Decisions
  - Timely and Cost-effective
  - Effective in saving lives and property, reducing losses

- For Profit and not-for-profit
  - Business strategies/business continuity
  - Economic Resilience
  - Investments and ROI
We are being asked to do more with less. Can we do more together than we can apart?
MULTI-STAKEHOLDER ... COLLABORATION

Convene

Collaborate

Impact

ResilientAmerica
Disaster Resilience: A National Imperative

Disaster Resilience
A National Imperative

Increasing National Resilience to Hazards and Disasters
The Perspective from the Gulf Coast of Louisiana and Mississippi
Summary of a Workshop

Disaster Resilience in America
Launching a National Conversation

Disaster Resilience Report
November 30, 2010
Four major recommendations

• Manage and communicate risk
• Measure resilience in communities
• Build community partnerships and coalitions
• Share information and data to build resilient communities
http://www.nap.edu/catalog.php?record_id=13457
Part III: Implementing the Report

BUILD COMMUNITY RESILIENCE
WHAT DOES THAT MEAN?
The ability to prepare and plan for, absorb, recover from, or more successfully adapt to actual or potential adverse events.
What does Resilience mean to me? Here in my community?
Building **Whole of Society Resilience** is hard to enact

So....
A short primer would be helpful

RESILIENT AMERICA 101
RA101  **What Is It?**

- A new program at the National Academy of Sciences
- Launched in 2014
- Based on *Disaster Resilience: A National Imperative Report*
- A way to engage diverse sets of stakeholders in community action to build resilience
Four major recommendations

• Manage and communicate risk
• Measure resilience in communities
• Build community partnerships and coalitions
• Share information and data to build resilient communities
RA101 What does it Do?

• Seeks to **identify** and **share** key elements in building resilience at the community level
• Works with 4 communities as **they** develop a community-based and –owned resilience strategy
• Organizes workshops, meetings, table top exercises, and other **multi-stakeholder** interactive events with resilience themes
• Provides **resources**, **experts**, and **information** to help communities and decision makers better understand, communicate, and manage **risk**.
Seattle, Washington
Cedar Rapids, Iowa
Charleston, SC
Pilot #4
RA101 **WHO IS INVOLVED?**

- **Experts**, including social scientists, engineers, risk managers, private sector business operators, academics, public sector decision makers, federal agencies, and more
- **Community members**, businesses, decision makers
- Those who **have resources** and can help
- Those who **need resources** and assistance
- **Diverse stakeholders**: Private sector, public sector, NGOs, academia, individuals
• Costs of natural disasters and other disruptions are **rising**

• Greater **networks** and connections ➔ more opportunities for **widespread impacts**

• Federal or **top-down** programs to build resilience get **mixed results**

• Bottom-up approaches are **needed**, but hard to implement alone

• Communities want to **protect** their quality life, their property, and their people.
RA101 General Timeline?

- Launched in January 2014
- First two pilot communities selected in September 2014
- Third pilot community selected in February 2015
- Fourth pilot community to be confirmed in spring 2015
- Extreme Events Ice Breaker goes on line May 2015
- Community Resilience Strategy Step 1, Spring 2015
- Critical Infrastructure/Economic Supply Chain, Meeting 1, May 2015
- Measures/metrics Workshop in July 2015 in Cedar Rapids, IA
- Community Resilience Strategy Step 2, Summer/Fall 2015
- Community Resilience Strategy Step 3, Winter 2015
- Community Strategy Step 4, Spring 2016
- Community Resilience Strategy completed Fall 2016

Resilient America
Part IV:

AN APPROACH TO COMMUNITY RESILIENCE
THE RESILIENT AMERICA APPROACH

Broad Ideas

Specific Actions
The Resilient America Approach

- Helps community members understand different aspects of community resilience
- Brings diverse community stakeholders together
- Brainstorms ideas about community resilience
- Defines elements that are strong influences on building resilience
- Gathers information from the community
- Identifies elements that may be included in the community resilience strategy
What are the community priorities?
How do priorities frame resilience?
How can we identify the priorities?
COMMUNITY COMPRISED OF 5 ENVIRONMENTS

1. Physical— the built environment
2. Natural— natural resources, non-engineered structures, ecosystem services
3. Economic— level, variability, and diversity of income sources; access to financial resources
4. Social/wellness— the capacity for people to connect with each other
5. Human— the sum of people’s skills, knowledge, labor, and good health
6 Steps

1. Define what each environment means to that community
2. Brainstorm ideas of the types of things that are a part of that community
3. Categorize the brainstormed list
4. Identify key needs for each category to function
5. Rank the categories (relative importance)
6. Use the highest ranked items in the community resilience strategy
Brainstormed List of Elements in each Environment

- ________
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Categorize Ideas

- Category 1
- Category 2
- Category 3
- Category n

Rank Categories

- High
- Medium
- Low
- High

Use Highest Rankings in Community Resilience Strategy
Natural Environment

natural resources, non-engineered structures, and associated eco-system services (e.g., erosion, surge, flood protection)

What are Charleston’s resilience challenges?

Political pressures

Natural

Healthy ecosystems and opportunities to employ natural & nature-based solutions to embed resilience

Adapting growth while preserving ecosystem services

Healthy future depends on & a shared environment from development

ResilientAmerica
What are Charleston’s resilience challenges?

Physical Environment:
- Most of our physical environment (e.g., buildings, infrastructure) are built to be above sea level, but our vulnerabilities will increase.
- Too much development.
- Too much reliance on I-26.
- Warmer weather.
- More storms, increased rainfall.
- Increased erosion, increased flooding.
- Higher sea levels.
- Higher temperatures.
- Increased wild fires.
- More severe storms.

Social Environment:
- Charleston is known for its culture and history.
- Charleston is known for its hospitality.
- Charleston is known for its history.
- Charleston is known for its food.
- Charleston is known for its art.
- Charleston is known for its music.
- Charleston is known for its weather.
- Charleston is known for its way of life.
- Charleston is known for its people.
- Charleston is known for its traditions.
- Charleston is known for its local businesses.
- Charleston is known for its natural beauty.
- Charleston is known for its natural resources.
- Charleston is known for its natural landscapes.
- Charleston is known for its natural wonders.
- Charleston is known for its natural areas.
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Armoring the shore
Natural Infrastructure
historical sites

Definition
co-benefits
"resources → natural
Ecology based
Impacts of degradation to eco-
Structure of the area
Relationship w/ people -
Nature based STRUCTURE

Economic growth
urban growth
land use - local
Regulatory FW - state &
Property owners - Priv
Political Will
Infrastructure
Education - informed citizenry
Environmental Education - college
Fishing / Hunting
Birders
Parks

Land Use
- Economic growth
- Pop ↑ recent
- Urban ↑

Politics
- Planning

Property Owners
- Housing

Regulation
- Impact of increment
- Building Codes
- Conservation ed.
- Aquaculture

Education
- Informed citizenry
- Aquaculture ed.
- Conservation groups

Tourism
- Eco tourism
- Fishing / hunting

Transportation
- Economic Growth
- Industry

Federal Agency
- Natural Resources
- Environmental Protection
- Ecosystem Services

Sea Level Rise
- Wetlands
- Protection

Pollution
- Recreations
- Pollution

Recreations
- Charleston
- Natural

Parks
Beaches
Public Waterways

Resilient America

Advisers to the Nation on Science, Engineering, and Medicine
Brainstormed List of Elements in each Environment

- _______
- _______
- _______
- _______
- _______
- _______
- _______
- _______
- _______
- _______
- _______
- _______

Categorize Ideas

Category 1

Category 2

Category 3

Category n

Rank Categories

High

Medium

Low

Use Highest Rankings in Community Resilience Strategy
End Results

- 2-3 highly ranked categories of important elements per type of environment
- The categories can be cross-cutting
- The most important categories for resilience begin to create the whole of society resilience picture
- These categories create the structure for the community’s resilience strategy
These priorities create the basic structure for the community’s resilience strategy.

- Aspirational state for each priority
- Baseline assessment for each priority
- Relative scale of progress
- Each community works on its own scale
- No scorecard
- Bottom up approach
ELEMENTS OF MEASURES

Strength/Robustness
Speed
Ability to mobilize/access to resources
Redundancy
# The Makings of a Strategy

<table>
<thead>
<tr>
<th>Priority</th>
<th>Baseline</th>
<th>Aspiration</th>
<th>Steps to Take</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Priority 1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Natural Priority 2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Priority 1</td>
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<td></td>
<td></td>
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<tr>
<td>Social Priority 2</td>
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<tr>
<td>Social Priority 3</td>
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</tr>
<tr>
<td>Economic Priority 2</td>
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</tbody>
</table>
Almost Done

BOTTOM LINE—TAKE HOME MESSAGE
1. Building community resilience combines both bottom-up and top-down approaches.
2. Operationalizing resilience requires a multi-stakeholder approach (federal agencies, state agencies, private sector, academia, etc.) and alignment of interests across stakeholders groups.
3. Implementing resilience involves identifying community priorities.
4. Measures are relative within each community; the approaches are transferrable across communities.
Community resilience is a long journey.

We can do it together.
Thank you!  laugustine@nas.edu

HTTP://RESILIENTAMERICA.NAS.EDU