Breaking the Disaster Cycle: Future Directions in Natural Hazard Mitigation

Course Introduction; Traditional Emergency Management Policy and the Disaster Cycle

Author: David Godschalk
University of North Carolina
Chapel Hill
Course Introduction

Objectives:

1.1 Conduct self-introductions of students and faculty; identify student backgrounds, learning goals and course expectations.

1.2 Discuss course overview, purpose, and overall objectives.

1.3 Review course syllabus and modules; describe requirements for student participation and term papers.
Course Introduction

Objectives:

1.4 Present information on availability of course textbooks, readings, and materials.

1.5 Describe the history of U.S. disaster policy and hazard mitigation practice.

1.6 Identify the assumptions underlying traditional federal disaster policy, based on a post-disaster model of mitigation.
Course Introduction

Objectives:

1.7 Describe the intergovernmental policy system for natural hazard mitigation under the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

1.8 Discuss the concepts of mitigation capacity and commitment.

1.9 Discuss problems with hazard mitigation under the traditional model, including issues of repetitive damage and the disaster cycle.
Course Introduction

- Objectives 1.1 – 1.4
  - Course introduction and overview
  - Course requirements and resources
Evolution of U.S. Disaster Policy and Practice

Objective 1.5:

- The 1889 to 1949 Period
  - Limited federal disaster assistance
  - Focused on flood control - Mississippi flood of 1927
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Figure 1.1. Major Natural Disaster Events and Federal Assistance: 1989-1927. Source: Godschalk et al. 1999; Platt 1999

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
<th>Location</th>
<th>Deaths/Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>1889</td>
<td>Johnstown PA dam break</td>
<td>2209 deaths</td>
<td></td>
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<tr>
<td>1900</td>
<td>Galveston TX hurricane</td>
<td>over 6000 deaths</td>
<td></td>
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<tr>
<td>1906</td>
<td>San Francisco earthquake and fire</td>
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<tr>
<td>1917</td>
<td>Flood Control Act of 1917</td>
<td></td>
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<tr>
<td>1926</td>
<td>South Florida hurricane</td>
<td></td>
<td></td>
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<tr>
<td>1927</td>
<td>Lower Mississippi River flood</td>
<td></td>
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</tbody>
</table>
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Figure 1.1. Major Natural Disaster Events and Federal Assistance: 1928-1944. Source: Godschalk et al. 1999; Platt 1999

<table>
<thead>
<tr>
<th>Year</th>
<th>1928</th>
<th>1933</th>
<th>1936</th>
<th>1937</th>
<th>1938</th>
<th>1944</th>
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<tbody>
<tr>
<td></td>
<td>Lower Mississippi</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>River Flood Control</td>
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<td></td>
<td>Act of 1936</td>
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<td></td>
<td>St. Francis CA</td>
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<tr>
<td></td>
<td>dam break:</td>
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<td></td>
<td>over 400 deaths</td>
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<tr>
<td></td>
<td></td>
<td>Long Beach CA</td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>earthquake</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Ohio and Lower</td>
<td></td>
<td>Flood Control Act of</td>
<td>South Florida</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mississippi</td>
<td></td>
<td>1938</td>
<td>Hurricane</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>River floods</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>New England Hurricane</td>
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<td></td>
<td></td>
<td></td>
<td>Flood Control Act of</td>
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<td>1938</td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td>South Florida Hurricane</td>
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Future Directions in Natural Hazard Mitigation
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Objective 1.5

The 1950 to 1987 Period:

- Federal Disaster Relief Act of 1950 - federal role expands greatly
- 1956 National Flood Insurance Program Act
- Disaster Relief Act of 1969
- The National Flood Insurance Program (NFIP)
- Additional programs
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#### Figure 1.2. Major Natural Disaster Events and Federal Assistance: 1950-1968. Source: Godschalk et al. 1999; Platt 1999

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<tbody>
<tr>
<td>Disaster Relief Act of 1950</td>
<td>TVA Local Flood Relief Program</td>
<td>New England Hurricanes</td>
<td>National Flood Insurance Program Act</td>
<td>Alaskan Earthquake Assistance Act</td>
<td>Hurricane Betsy - Gulf of Mexico</td>
<td>National Flood Insurance Act</td>
</tr>
<tr>
<td>Small Business Administration Disaster</td>
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</tbody>
</table>
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- Alaskan earthquake of 1964

Source: NOAA
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**Figure 1.2. Major Natural Disaster Events and Federal Assistance: 1969-1973.** Source: Godschalk et al. 1999; Platt 1999

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<tbody>
<tr>
<td>Hurricane Camille - Gulf of Mexico</td>
<td>Disaster Relief Act</td>
<td>San Fernando California Earthquake</td>
<td>Hurricane Agnes (mid-Atlantic) Disaster Relief Act of 1969</td>
<td>Flood Disaster Relief Act of 1973</td>
</tr>
<tr>
<td>Disaster Relief Act of 1969</td>
<td></td>
<td></td>
<td>Rapid City SD flash flood</td>
<td>Federal Dam Safety Act</td>
</tr>
</tbody>
</table>

Future Directions in Natural Hazard Mitigation
**Evolution of U.S. Disaster Policy and Practice**

> Figure 1.2. Major Natural Disaster Events and Federal Assistance: 1974-1982.  
> Source: Godschalk et al. 1999; Platt 1999

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<tbody>
<tr>
<td>Act</td>
<td>Disaster Relief Act of 1974</td>
<td>Earthquake Hazards Reduction Act</td>
<td>FEMA established</td>
<td>Hurricane David (Gulf of Mexico coast)</td>
<td>Coastal Barrier Resources Act</td>
</tr>
<tr>
<td>Act</td>
<td>Water Resources Development Act</td>
<td>Order 11988: nonstructural floodplain management</td>
<td>Hurricane Frederic (Gulf of Mexico coast)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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- Hurricane David 1980

Source: NOAA
Objective 1.5

The 1988 – 2000 Period:

- 1988 - Robert T. Stafford Disaster Relief and Emergency Assistance Act:
  - State mitigation plans
  - Hazard mitigation grants
  - Hazard mitigation teams

- 2000 Mitigation Act
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Figure 1.3. Major Natural Disaster Events and Federal Assistance: 1988-1994. Source: Platt 1999

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</thead>
<tbody>
<tr>
<td>Stafford</td>
<td>Hurricane Hugo</td>
<td>Hurricane Andrew (FL &amp; LA)</td>
<td>Hurricane Iniki (HI)</td>
<td>Midwest Floods</td>
<td>Northridge CA earthquake</td>
</tr>
<tr>
<td>Disaster Relief and Emergency Assistance Act</td>
<td>(Caribbean and southeastern US)</td>
<td>Oakland CA wildfires</td>
<td>Hazard Mitigation and Relocation Assistance Act</td>
<td>National Flood Insurance Reform Act</td>
<td></td>
</tr>
</tbody>
</table>

Future Directions in Natural Hazard Mitigation
**Evolution of U.S. Disaster Policy and Practice**

- **Figure 1.3. Major Natural Disaster Events and Federal Assistance: 1994-2000.** Source: Platt 1999

<table>
<thead>
<tr>
<th>Year</th>
<th>Events</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995 - 97</td>
<td>Hurricanes Fran and Bertha, NC</td>
</tr>
<tr>
<td></td>
<td>CA floods</td>
</tr>
<tr>
<td>1996</td>
<td>Hurricanes George (Gulf of Mexico states)</td>
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<tr>
<td></td>
<td>Ohio River Floods, Red River Floods (MN, ND)</td>
</tr>
<tr>
<td>1997</td>
<td>Hurricane Floyd (NC &amp; eastern seaboard)</td>
</tr>
<tr>
<td></td>
<td>Hurricane Dennis (NC &amp; PA)</td>
</tr>
<tr>
<td>1998</td>
<td>Disaster Mitigation Act of 2000</td>
</tr>
</tbody>
</table>
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Figure 1.4. Stafford Act Mitigation Components

1) State Mitigation Plans (Section 409)
   - Required to receive federal disaster assistance
   - Content:
     • Hazard evaluation
     • Analysis of state & local mitigation capabilities
     • Goals & strategies to reduce long-term vulnerability
     • Methods to implement, monitor, & update mitigation plans
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- Figure 1.4. Stafford Act Mitigation Components

2) Hazard Mitigation Grant Program (Section 404)
   - Federal matching grants for state & local mitigation projects
     - Tied to disaster declarations
     - Limited to 15% of federal disaster assistance monies for a disaster
   - Purpose: reduce risk of future damage, hardship, loss, or suffering from disasters
   - Can be supplemented by HUD CDBG funds, SBA loans, & other funding sources
   - Other federal disaster grants available to repair & replace damaged public facilities & provide individual assistance
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- Figure 1.4. Stafford Act Mitigation Components
  - 3) Hazard Mitigation Teams
    - Federal-state-local teams activated after disasters
    - Came to disaster scene, reviewed damage, & issued report to guide applications for 404 mitigation grant applications & revisions to 409 mitigation plans

Point-Aux-Chenes, LA, 2002: FEMA Inspector Ian Gilliam inspects homes damaged by Hurricane Lili. (Source: FEMA)
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Figure 1.5. Disaster Mitigation Act of 2000

Mitigation Planning (Section 322)
- Continues requirement for state mitigation plans as condition of disaster assistance
- Provides for states to receive increased HMGP funds, (from 15 to 20% of total federal assistance) if FEMA-approved Standard & Enhanced State Plan in effect at time of disaster declaration
- Establishes new requirement for preparation of local & multi-jurisdictional mitigation plans
- Authorizes up to 7 percent of HMGP funds available to a state to be used for development of state, tribal, and local pre-disaster mitigation plans
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- Figure 1.6 Evolution of Federal Disaster Agencies.

- 1951 – 1952  Housing and Home Finance Agency (HHFA)
- 1953 – 1958  Federal Civil Defense Administration (FCDA)
- 1974 – 1979  Federal Disaster Assistance Administration (FDAA) of HUD
- 1979 –       Federal Emergency Management Agency (FEMA)

Source: Platt 1999
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Objective 1.6

- Identify the assumptions underlying traditional federal disaster policy, based on a post-disaster model of mitigation:

  - Mitigation
  - Preparedness
  - Response
  - Recovery
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Figure 1.7. Emergency Management Phases

- Mitigation
- Preparedness
- Disaster Event
- Response
- Recovery
- Analysis & Implementation of Lessons Learned
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Figure 1.8 Post Disaster Mitigation Under the 1988 Stafford Act. Source: Godschalk et al. 1999

- Disaster Event
- State Hazard Mitigation Plan (409)
- State and Local Hazard Mitigation Projects (404)
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Objective 1.7

- Describe the intergovernmental policy system for natural hazard mitigation under the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

- Six related components:
  - Federal hazard mitigation policy
  - FEMA regional office implementation
  - State political and organizational commitment
  - State hazard mitigation plans
  - State implementation actions
  - Risk reduction effectiveness
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Figure 1.9. Intergovernmental System for Hazard Mitigation in Theory. (Source: Godschalk et al. 1999)
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Objective 1.8

- Discuss the concepts of mitigation capacity and commitment:
  - The Achilles heel of hazard mitigation
  - The “moral hazard”
    - Mitigation capacity
    - Mitigation commitment
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- Figure 1.10. Mitigation Capacity and Commitment

- **Mitigation capacity: ability to carry out effective hazard mitigation**
  - Number of full-time mitigation staff members
  - Training of mitigation personnel
  - Resources devoted to mitigation

- **Mitigation commitment: willingness to support risk reduction goals**
  - State & local elected officials support for mitigation
  - Staff support for mitigation
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Objective 1.9

- Discuss problems with hazard mitigation under the traditional model, including issues of repetitive damage and the disaster cycle:
  
  - Repetitive damage
  - Disaster cycle