

Session No. 1

Course Title: Breaking the Disaster Cycle: Future Directions in Natural Hazard Mitigation

Session Title: Course Introduction: Traditional Emergency Management Policy and the Disaster Cycle

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Time: 150 minutes + 15 minute break

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.
 - 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.
 - 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.
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Scope:

During the first part of this initial class meeting, the instructor sets the stage for the seminar, reviews the syllabus, and lays out the requirements for student participation in the course. Students introduce themselves, and talk about their backgrounds, learning goals, and expectations for the course. The instructor discusses the importance of critical thinking by seminar participants, as they read about and discuss the social, environmental, and practical issues raised by the nation's attempt to implement a new hazard mitigation policy. In contrast to a lecture course, this graduate seminar stresses the *analysis* of hazard mitigation policy and practice, based on independent thought and judgement by the students. The seminar setting is designed to encourage student research; students prepare and present two shorter papers on selected aspects of federal and state mitigation policy

during the term, as well as a longer term paper at the conclusion of the course. Depending on class size, this first part should take no more than twenty to thirty minutes.

In the second part of the class, the instructor lectures on the historic evolution of U.S. disaster policy and practice, with a focus on the period since the adoption of the original Stafford Act in 1988. This evolution is related to a theoretical framework based on developing federal, state, and local mitigation capacity and commitment. This historic perspective is grounded in case studies of natural disasters and mitigation attempts under the post-disaster mitigation policy set forth in the original Stafford Act. The purpose of this lecture is to provide students with a common background and understanding of the evolving context for hazard mitigation. This second part will take the balance of the class period.

Reading:

Instructor and student reading:

Godschalk, David R., et al... 1999. Chapter 1, "Mitigating Natural Hazards: A National Challenge," *Natural Hazard Mitigation: Recasting Disaster Policy and Planning*. Washington. D.C.: Island Press, pp. 3-25.

Platt, Rutherford H. 1999. Introduction and Chapter 1. "Shouldering the Burden: Federal Assumption of Disaster Costs," *Disasters and Democracy: The Politics of Extreme Natural Events*. Washington. D.C.: Island Press, pp. 1-46.

Additional instructor reading:

Waugh, William L., Jr. 2000. Chapter 1, "The Emergency Management Profession and Field of Study," and Chapter 2, "Emergency Management in the United States," *Living With Hazards: Dealing with Disasters*. Armonk, NY: M.E. Sharpe, pp. 3-58.

Handouts:

- 1.1 Syllabus: Graduate Seminar on New Directions in Hazard Mitigation: Breaking the Disaster Cycle.

Overheads:

- 1.1 Major Natural Disaster Events and Federal Assistance: 1889-1949
- 1.2 Major Natural Disaster Events and Federal Assistance: 1950-1987
- 1.3 Major Natural Disaster Events and Federal Assistance: 1988-2000
- 1.4 Stafford Act Mitigation Components
- 1.5 Disaster Mitigation Act of 2000

- 1.6 Evolution of Federal Disaster Agencies
 - 1.7 Emergency Management Phases
 - 1.8 Post Disaster Mitigation Under the 1988 Stafford Act
 - 1.9 Intergovernmental System for Hazard Mitigation in Theory
 - 1.10 Mitigation Capacity and Commitment
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General Requirements:

The first part of this class should be presented as an interactive discussion, during which the course objectives are described and the seminar participants introduce themselves. The longer second part of the class should be presented as a lecture on the recent history of U.S. natural disasters and the evolution of U.S. disaster policy.

Remarks:

If possible, the first reading assignment should be given out to enrolled students prior to the first class meeting, so that students have the opportunity to complete the reading in advance. The course syllabus should be distributed at the start of the class and will be referred to during the discussion of the course introduction.

Course Introduction

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

This part of the session should be conducted as an informal interactive discussion. The faculty person introduces himself or herself, explaining him/her experience, interests, and research related to hazard mitigation. Students introduce themselves, and describe: 1) their backgrounds (with particular attention to the relationships to hazard mitigation), 2) their learning goals for the course (what they hope to take away from the seminar), and 3) their expectations for the course as a learning process (how they will interact with the course materials, instructor, and other participants). The instructor should use the start of the seminar as an opportunity to create a positive learning climate and to assess the capabilities and backgrounds of the seminar participants, in order to understand student goals and needs and to establish faculty expectations for the level of accomplishment desired.

Objective 1.2 Discuss course overview, purpose, and overall objectives.

The course is designed as a learning opportunity for students to analyze U.S. disaster policy, and to think critically about ways to break the disaster cycle in which repetitive damage has occurred from repeated disasters. The course stresses the concept of *hazard mitigation*, in which state and local governments take action before the disaster event in order to reduce the impact of the disaster. The purpose of the course is to enhance the knowledge and skills of the students concerning hazard mitigation policy and practice, and to enable them to relate hazard mitigation to sustainable development and smart growth

initiatives. Course objectives are to provide seminar participants with a framework and forum to explore and discuss ways to break the disaster cycle through reading current literature, analyzing mitigation policies, tools and plans, and preparing and presenting papers on selected topics. The success of the course will depend upon participants assuming responsibility for active and informed discussion and analysis of hazard mitigation concepts, policies, tools, and planning.

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

The course syllabus is divided into four modules:

- 1) **Mitigation Policy Framework:** covers traditional emergency management policy under the Stafford Act, the disaster cycle, new mitigation policy under the Disaster Mitigation Act of 2000, and the implementation of the new policy with its relationships to sustainable and resilient communities.
- 2) **Mitigation Tools:** covers voluntary buyouts, assessing buyouts, analyzing and assessing insurance and structural approaches to hazard mitigation, as well as student papers analyzing federal mitigation policy and mitigation tools.
- 3) **State Mitigation Planning:** covers state-level implementation of the new policy under the Disaster Mitigation Act of 2000, developing sustainable mitigation criteria, preparing and assessing state mitigation plans, analyzing vulnerability to floods, earthquakes and hurricanes, shifting responsibility for developing in hazardous areas to users, and student papers analyzing state mitigation policy and tools.
- 4) **Local Mitigation Planning:** covers preparing and assessing local mitigation plans, defining hazard areas and notifying the public of risks, linking hazard mitigation to smart growth, defining governmental, group and individual ethical responsibilities for hazard mitigation, measuring hazard mitigation success, and student term paper reports.

Students are expected to participate in the seminar as *active learners*, rather than passive recipients of information and knowledge. The seminar philosophy is one of mutual learning, in which the students and the instructor together review the state of knowledge about a topic and engage in free and active discussion and critical thinking. The seminar is structured around lectures, discussions, and exercises, as well as periodic presentations of student papers. The intent is to form a learning group, whose members interact with each other and stimulate each other's thinking within a general intellectual framework. The syllabus sets the initial direction, but may be adapted or expanded as the participants explore various topics.

The expectation of this seminar is that every student will:

- Complete the assigned readings and participate in class discussions (5% of grade).
- Participate in six class exercises (30% of grade).
- Prepare and deliver a team presentation on federal mitigation policy (15% of grade) and one on state mitigation policy (15% of grade).
- Prepare an individual term paper on a selected topic and present its findings and conclusions to the class (35% of grade).

The term paper is to be prepared on a hazard mitigation topic chosen by the student, following approval by the instructor of the topic and study approach. The paper should be designed to qualify as a submittal to a peer-reviewed journal, following journal standards for length, references, logical consistency, originality, and quality. The major conclusions and findings of the term paper are to be presented to, and discussed with, the class.

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

Course readings will be drawn from a number of textbooks, journal articles, and other materials. Students are encouraged to purchase the primary text: *Natural Hazard Mitigation: Recasting Disaster Policy and Planning* (Island Press, 1999). Copies of all materials will be placed on reserve for the course.

Evolution of U.S. Disaster Policy and Practice

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

The 1889 to 1949 Period

While the U.S. has suffered damage from a number of floods, earthquakes, hurricanes, and other disasters, the evolution of our disaster policy and hazard mitigation practice has proceeded slowly and incrementally. As Platt indicates, very little federal disaster assistance was provided to states and local governments during the first half of the twentieth century. The federal disaster assistance that was provided focussed on flood control. (*Figure 1.1. Major Natural Disaster Events and Federal Assistance: 1889-1949*)

According to Platt (1999, p. 1):

For its first 160 years of nationhood, the United States had no general policy or program for responding to natural or human-caused disasters. Such catastrophes as: the New Madrid, Missouri, Earthquakes of 1811-1812, the Chicago Fire of 1873, the Johnstown, Pennsylvania, Dam Break in 1889, the Galveston Hurricane of 1900, the San Francisco Earthquake and Fire of 1906, the Miami Hurricane of 1926, the Lower Mississippi Flood of 1927, and the New England Hurricane of 1938 ravaged portions of the nation periodically. Deaths from such disasters numbered in the hundreds, and sometimes in the thousands. Costs in present-day terms ran into the billions of dollars.

Platt points out that Congress expressed sympathy and sometimes provided token financial assistance. But the tasks of response, recovery, and mitigation were organized locally. Local governments were expected to take the initiative to deal with their own disasters. Even after over 6000 died in the 1900 Galveston Hurricane, the 16 foot high sea wall was built by Galveston County. The Army Corps of Engineers initially provided only technical assistance, although it later extended the wall another four miles. After the 1906 San Francisco Earthquake, the federal role was chiefly to provide Army troops to deter looting. The city itself took the controversial initiative to dam the Hetch Hetchy River in Yosemite

National Park, in order to expand its water supply, whose failure was blamed for the burning of much of the city.

However, after the Lower Mississippi River broke through its levees in 1927 and spread across 20,000 square miles of floodplains, six state governors asked for federal assistance (Platt, 1999, p.2). Secretary of Commerce Herbert Hoover assumed direction of emergency response and coordinated federal, state, and local agencies. And Congress enacted the first major disaster legislation, the Lower Mississippi Flood Control Act of 1928 and its successors in 1936 and 1938. Aimed at controlling flood waters through construction of dams, levees, and diversion channels, that Act declared flood control to be a national responsibility and launched the Corps of Engineers on a multibillion dollar program to tame the nation's major rivers, which continues to the present day.

The 1950 to 1987 Period

The federal role expanded greatly with the passage of the Federal Disaster Relief Act of 1950, beginning a movement to transfer the financial costs of disasters from individuals and communities to the nation as a whole, funded by the tax payers (Platt, 1999, p. 11). (This expansion is illustrated in *Figure 1.2. Major Natural Disaster Events and Federal Assistance: 1950-1987*.) The 1950 Act was the first permanent and general disaster law passed by Congress and it became the model for future federal disaster laws. However, Platt (1999, p. 15) notes that, as originally established, the federal disaster assistance program was to be:

- Limited in scope of the federal assistance to be supplied.
- Contingent on a presidential disaster declaration finding that federal assistance is required to supplement state and local capabilities.
- Limited in the amount of federal funding to be allocated to disaster relief.

With each succeeding Act, these limitations were relaxed. In effect, the 1950 Act was the "camel's nose under the tent," which introduced the concept of federal responsibility for disasters arising from the bad luck or bad judgement of local communities that had allowed development to proceed in high hazard areas.

Although Congress passed many disaster acts during the 1950-1987 period, perhaps the most influential were the 1950 Federal Disaster Relief Act and its successors, and the 1956 National Flood Insurance Program Act and its successors.

Following the destructive Hurricane Camille that killed 256 in Louisiana and Mississippi, Congress passed the Disaster Relief Act of 1969 to create a federal coordinating officer to represent the president in disaster relief efforts (Waugh, 2000, pp. 26-28). The Disaster Relief Act of 1974, following Hurricane Agnes, authorized individual and family assistance, extending federal responsibilities beyond the state and local government levels.

The National Flood Insurance Program (NFIP) was originally authorized by Congress in 1956, but it was not funded or implemented (Platt, 1999, pp. 28-33). However, the 1968 National Flood Insurance Act did fund and implement the program. This Act made low-cost flood insurance available to property owners, to make up for the lack of affordable insurance from private insurers. In a tradeoff between regulatory and insurance provisions,

NFIP coverage was only to be available in communities that enact floodplain management regulations that meet federal standards to reduce future vulnerability (a mitigation approach). The NFIP also embarked on a program of mapping local flood hazard areas, where insurance would be provided. These flood hazard rate maps (FIRMs) identify areas of flood hazard (the 100 year floodplain) that must be managed through land use and building regulations and provide data to calculate NFIP insurance premiums. However, the voluntary nature of the original NFIP program meant that it lacked implementation teeth. So, following major flood disasters in 1972, Congress made the purchase of a flood insurance policy mandatory for any property owner receiving federally related financing involving flood prone property. This meant that anyone with property in a flood hazard area applying for a federally guaranteed mortgage had to buy flood insurance, and dramatically increased participation in the program.

Other disaster programs created during this period included: the 1953 Small Business Administration Disaster Loan Program; the Federal Dam Safety Act of 1972; the Water Resources Development Act of 1974; the 1977 Earthquake Hazards Reduction Act which created the National Earthquake Hazards Reduction Program (NEHRP); and the Coastal Barrier Resources Act of 1982. In addition, under the Federal Crop Insurance Act of 1980, the U.S. Department of Agriculture provides subsidized crop insurance against disaster-related crop losses. And HUD, under the Community Development Act of 1974, is authorized to use their Community Development Block Grants (CDBG) program to channel disaster relief funds to local communities.

The 1988 to 2000 Period

The most important disaster legislation of the recent 1988-2000 period in the history of disasters and disaster assistance is the Robert T. Stafford Disaster Relief and Emergency Assistance Act passed in 1988, and subsequently amended. During this period, the number and magnitude of disasters expanded greatly, as did the attention to mitigation in federal disaster policy (*Figure 1.3. Disaster Events and Federal Assistance: 1988-2000*).

The Stafford Act was an important overhaul of the nation's disaster relief system and a major watershed in the history of disaster management (Godschalk et al., 1999). As the primary legislation during the 1990s, the Stafford Act governed the provision of federal disaster assistance and established the federal-state disaster assistance framework. The regulations implementing the Act define *hazard mitigation* as any action taken to reduce or eliminate the long-term risk to human life and property from natural hazards. In order to receive federal assistance, the governor of a disaster-stricken state requests a Presidential Disaster Declaration, on the basis of a finding that the disaster is of such severity and magnitude that effective response is beyond the capability of the state and federal assistance is necessary.

Mitigation under the Stafford Act has been carried out through three primary post-disaster activities (*Figure 1.4. Stafford Act Mitigation Components*):

- **State mitigation plans:** Under section 409 of the 1988 Stafford Act, states were required to prepare hazard mitigation plans as a condition of receiving federal assistance. State mitigation plans had to evaluate the hazards faced, describe and

analyze state and local mitigation policies and capabilities, establish mitigation goals and strategies to reduce long-term vulnerability, and provide methods to implement, monitor, evaluate and update mitigation plans to keep them current.

- **Hazard mitigation grants:** Under section 404 of the 1988 Stafford Act, Federal matching grants for state and local mitigation projects were provided through the Hazard Mitigation Grant Program (HMGP). These mitigation grant funds were tied to disaster declarations and were limited to a percentage of the federal disaster assistance monies made available for the particular disaster. Their purpose was to reduce the risk of future damage, hardship, loss, or suffering in areas affected by major disasters. While HMGP funds were the primary source of mitigation assistance, they could be supplemented by HUD CDBG funds, Small Business loans, and other funding sources. In addition, other federal disaster grants were available to repair and replace damaged public facilities and to provide individual assistance.
- **Hazard mitigation teams:** Federal-state-local teams were activated after disasters to identify immediate mitigation needs and issues to be addressed in the 409 hazard mitigation plans. The team reported to the disaster scene, reviewed the damage, and issued a report on mitigation opportunities and actions to guide applications for 404 mitigation grant applications and revisions to 409 mitigation plans.

A spate of disasters occurred during the decade following passage of the Stafford Act. Among the costliest were Hurricanes Hugo, Andrew and Floyd, the Loma Prieta and Northridge Earthquakes, and the Midwest, Ohio River and Red River Floods. During the seminar, we will review the policy changes resulting from, and the mitigation efforts undertaken in a number of these cases. For example, in response to the Midwest Floods, federal disaster policy was amended with passage of the 1993 Hazard Mitigation and Relocation Assistance Act and the 1994 National Flood Insurance Reform Act. However, the largest policy change took place with passage of the Disaster Mitigation Act of 2000, which substantially amends the Stafford Act.

The Disaster Mitigation Act of 2000 represents another important step in the evolution of federal disaster policy from a responsive, post-disaster mitigation approach to a proactive, pre-disaster approach (*Figure 1.5. Disaster Mitigation Act of 2000*). For the first time in the history of U.S. disaster policy, federal funds are made available for pre-disaster plan preparation and incentives are provided in the form of increased HMGP funds to those states that have an approved mitigation plan in effect at the time of a disaster. The major elements of the Act, contained in Section 322 (which repeals Section 409 of the Stafford Act):

- Continue the requirement for a state mitigation plan as a condition of disaster assistance.
- Provide for states to receive an increase in HMGP funds, from 15 to 20 percent of total federal assistance, if they have a FEMA-approved state mitigation plan in effect at the time of the disaster declaration.
- Establish a new requirement for preparation of local mitigation plans.
- Authorized 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.

During this seminar, we will discuss in further detail these policy changes and their implementation through new FEMA regulations.

Evolving Federal Disaster Assistance Responsibility

Responsibility for federal disaster assistance has migrated from agency to agency over time. Responsibility for administering the 1950 Act was initially assigned to the Housing and Home Finance Agency, which operated the federal urban renewal program. (*Figure 1.6. Evolution of Federal Disaster Agencies*). Under the impetus of the cold war's concern with civil defense, responsibility for disaster assistance was transferred to the Federal Civil Defense Administration in 1953, to the Office of Civil and Defense Mobilization in 1958, and to the Office of Emergency Planning in 1962. In 1974, responsibility moved back to the Federal Disaster Assistance Administration, an arm of the community planning agency—the U.S. Department of Housing and Urban Development (HUD). Finally, in 1979 disaster assistance responsibility was transferred to the newly created Federal Emergency Management Agency (FEMA), which was made up of an aggregation of civilian and military preparedness programs.

The history of federal disaster assistance helps to explain why many federal, state, and local emergency management agencies have their origins in the national civil defense system. Over time, emergency management agencies have largely shaken off their image as 1950s-style "air raid wardens." (Waugh, 2000, pp. 14-20) Responsibilities have broadened to include natural and technological hazards. Although former military personnel still dominate many emergency management agencies, the military style command and control culture has given way to more collaborative and professional administration approaches. At the same time, the study of disaster management has evolved from technical and engineering analyses to social science research on the sociology and policy aspects of disasters. However, following the terrorist attack of September 11, 2001, the military approach is again rising under the banner of homeland security, and it remains to be seen how the two streams of natural hazard mitigation and homeland security will be integrated. We will discuss this further in later classes.

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

The all-hazards or comprehensive emergency management model divides emergency management activities into four functional areas or phases (*Figure 1.7. Emergency Management Phases*): mitigation, preparedness, response, and recovery (Godschalk et al., 1999; Waugh, 2000). The phases are centered on the actual disaster event (hurricane, earthquake, flood, etc.) and connected in a feedback loop of learning from each disaster event in order to improve future mitigation and preparedness.

- **Mitigation** is prevention or reduction of losses from disasters through land use planning, building codes, dams and levees, etc. before the disaster event
- **Preparedness** is developing plans for evacuation, warning, and property protection to be carried out when a disaster warning is received.

- **Disaster event** is the occurrence of a hurricane, earthquake, flood, tornado, dam failure, or similar disaster.
- **Response** is immediate reaction to a disaster to provide emergency aid and assistance, such as search and rescue operations, medical assistance, fire fighting, and restoring public order.
- **Recovery** is post disaster activities to restore normal community operations, such as providing temporary shelter, restoring power, debris clearance, job assistance, small business loans, and rebuilding damaged structures.
- **Analysis and implementation of lessons learned** is feedback of the post-disaster learning about the effectiveness of hazard mitigation measures under actual disaster stresses into improvements in future mitigation plans and policies.

Traditional disaster policy, as exemplified by the 1988 Stafford Act, assumed that state and local mitigation should be planned and implemented *following* a major disaster. This *post-disaster model* was based on the concept that states would be motivated in the aftermath of presidentially declared disasters to consider actions to reduce the impacts of future disasters (Figure 1.8. *Post Disaster Mitigation Under the 1988 Stafford Act*).

While states were required to prepare Section 409 hazard mitigation plans, these were largely pro-forma exercises. The major emphasis was placed on Section 404 hazard mitigation grants aimed at correcting problems revealed by the disasters. In a sense, future mitigation actions were largely based on lessons from the most recent disasters, rather than on comprehensive mitigation plans that took the full range of hazard risks into account.

As Godschalk et al. (1999) found, the links between the state hazard mitigation plans and the projects undertaken with hazard mitigation grants under the HMGP were extremely tenuous. The disaster events drove the preparation of state mitigation plans and the applications for HMGP grants. The hazard mitigation process was more reactive than proactive.

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

Hazard mitigation under the 1988 Stafford Act was to be carried out through an intergovernmental system. According to Godschalk et al. (1999), this system can be envisioned as made up of six related components (*Figure 1.9. Intergovernmental System for Hazard Mitigation in Theory*). These were:

1. Federal hazard mitigation policy, including Stafford Act policies and implementing regulations for state hazard mitigation plans and hazard mitigation grants, as well as other national priorities, procedures, and programs.
2. FEMA regional office implementation efforts, in which the ten FEMA regional offices worked with states to encourage mitigation and to review mitigation plans and mitigation project grant applications.

3. State political and organizational commitment to the pursuit of mitigation and state capacity (funding, staff, information, authority, etc.) to carry out mitigation plans and programs.
4. State hazard mitigation plans that defined mitigation needs, goals and policies.
5. State implementation actions through hazard mitigation grant projects and other state actions to reduce the impact of future disasters.
6. Risk reduction effectiveness of the total of both structural and nonstructural mitigation policies and actions.

In practice, as Godschalk et al. (1999) discovered, the actual hazard mitigation system in practice was driven more by the most recent presidentially declared disaster than by long range mitigation planning. Hazard mitigation grant projects were conceived in the aftermath of, and responded to, the most recent disaster. The system was reactive rather than proactive. And other system elements, not emphasized in the original Stafford Act model, were *local mitigation plans and actions*, as well as *local commitment and capacity*.

Objective 1.8 Discuss the concepts of mitigation capacity and commitment.

Empirical studies have consistently found that the Achilles heel of hazard mitigation is weak state and local mitigation capacity and commitment. Hazard mitigation interest has peaked following a disaster and then waned as memories of disaster damage fade. In part this may be due to the presence of a sense of entitlement, in which state and local governments have come to believe that it is the duty of the federal government to pay for damage from hazards. Platt (1999, p. 37) calls this the problem of "moral hazard," in which federal disaster assistance program contribute inadvertently to the losses they were intended to relieve by replacing rather than supplementing state and local mitigation efforts.

Analysts have identified two related concepts that determine the effectiveness of state and local hazard mitigation: mitigation capacity and mitigation commitment (*Figure 1.10. Mitigation Capacity and Commitment*).

Mitigation capacity is the ability of government agencies to carry out effective hazard mitigation programs. One key element of capacity is simply the number of full-time mitigation staff members. In the past, mitigation responsibilities were often part-time. Few states maintained full time mitigation officers on a continuous basis. Without full-time mitigation personnel and supporting resources, mitigation programs tended to be weak and program implementation tended to be hit and miss.

Mitigation commitment is the willingness of governments and their staffs to support disaster policy goals to reduce risk. While emergency management staff members typically are committed to hazard mitigation, they require the commitment of state and local elected officials to support and adopt their mitigation plans. These elected officials must budget for mitigation program resources, and consider impacts on mitigation of planning and development actions that have an impact on placing people and property at risk. If their commitment to mitigation is low, then risk reduction takes a back seat to other priorities.

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

Studies of hazard mitigation carried out under the traditional model have identified major issues calling for correction. The issue of *repetitive damage* arises when properties located in hazard areas, such as flood plains, are damaged over and over. After each new flood damages the houses or business buildings, the property owners receive payments from the National Flood Insurance Program. The structures are rebuilt, only to be damaged again in subsequent floods. Owners again receive insurance payments and rebuild the structures over and over again.

When this process of disaster damage, insurance payment, rebuilding, disaster damage, insurance payment, rebuilding, etc. continues over time, it sets up a *disaster cycle*. This repeating cycle is the antithesis of effective hazard mitigation. Instead of taking action to ensure that future damage does not occur through relocating the structure to a safe location outside the floodplain, the structure is repeatedly restored with federally subsidized insurance.

Limiting repetitive damage and interrupting the disaster cycle are two of the most critical issues to be confronted by hazard mitigation policy. As we shall see when we discuss the Great Midwest Flood disaster, FEMA instituted a major change in federal policy to limit repetitive damage from riverine flooding and to interrupt the disaster cycle. The 1993 Hazard Mitigation and Relocation Assistance Act was the first federal policy to require the relocation of damaged structures from the floodplain, rather than simply allowing them to be rebuilt in their original location.

We will come back to this issue of *breaking the disaster cycle* as a major goal of hazard mitigation policy and programs throughout this course. It is a critical issue. While it sounds logical and straightforward, in practice it is very difficult to achieve. Because large parts of many communities have been developed within hazard zones, ensuring their safety in the event of future disasters is a major challenge.

Figure 1,1. Major Natural Disaster Events and Federal Assistance: 1889-1949. Source: Godschalk et al. 1999; Platt 1999

1889	Johnstown PA dam break: 2209 deaths
1900	Galveston TX hurricane: over 6000 deaths
1906	San Francisco earthquake and fire
1917	Flood Control Act of 1917
1926	South Florida hurricane
1927	Lower Mississippi River flood
1928	Lower Mississippi River Flood Control Act of 1928
	St. Francis CA dam break: over 400 deaths
1933	Long Beach CA earthquake
1936	Ohio and Lower Mississippi River floods
	Flood Control Act of 1936
1937	New England Hurricane
1938	Flood Control Act of 1938
1944	South Florida Hurricane

Figure 1.2. Major Natural Disaster Events and Federal Assistance: 1950-1987. Source: Godschalk et al. 1999; Platt 1999

1950	Disaster Relief Act of 1950
1953	TVA Local Flood Regulation Program Small Business Administration Disaster Loan Program
1954-55	New England hurricanes
1955	National Flood Insurance Program Act
1964	Alaskan earthquake Alaskan Earthquake Assistance Act
1965	Hurricane Betsy: Gulf of Mexico Southeast Hurricane Disaster Relief Act
1968	National Flood Insurance Act
1969	Hurricane Camille: Gulf of Mexico and inland Disaster Relief Act of 1969
1970	Disaster Relief Act
1971	San Fernando CA earthquake
1972	Hurricane Agnes (middle Atlantic states) Rapid City SD flash flood Federal Dam Safety Act
1973	Flood Disaster Protection Act of 1973
1974	Disaster Relief Act of 1974 Water Resources Development Act
1977	Earthquake Hazards Reduction Act Executive Order 11988: nonstructural floodplain management
1978	FEMA established Hurricane Frederic (Gulf of Mexico coast)
1980	Hurricane David (Gulf of Mexico coast)
1982	Coastal Barrier Resources Act

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

1988	Stafford Disaster Relief and Emergency Assistance Act
1989	Hurricane Hugo (Caribbean & southeast Atlantic states)
1991	Oakland CA wildfires
1992	Hurricane Andrew (FL & LA) Hurricane Iniki (HI)
1993	Midwest floods Hazard Mitigation and Relocation Assistance Act
1994	Northridge (CA) earthquake National Flood Insurance Reform Act
1995-97	CA floods
1996	Hurricanes Fran & Bertha (NC)
1997	Ohio River floods Red River floods (MN, ND)
1998	Hurricane Georges (Gulf of Mexico states)
1999	Hurricane Floyd (NC & eastern seaboard states) Hurricane Dennis (NC, PA)
2000	Disaster Mitigation Act of 2000

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

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

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

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 state mitigation plan in effect at time of disaster declaration
- Establishes new requirement for preparation of local 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

Figure 1.6. Evolution of Federal Disaster Agencies.

Source: Platt 1999

- 1951-52 Housing and Home Finance Agency (HHFA)
- 1953-58 Federal Civil Defense Administration (FCDA)
- 1958-62 Office of Civil and Defense Mobilization (OCDM)
- 1962-74 Office of Emergency Planning (OEP)
- 1974-79 Federal Disaster Assistance Administration (FDAA)
of HUD
- 1979-- **Federal Emergency Management Agency (FEMA)**

Figure 1.7. Emergency Management Phases

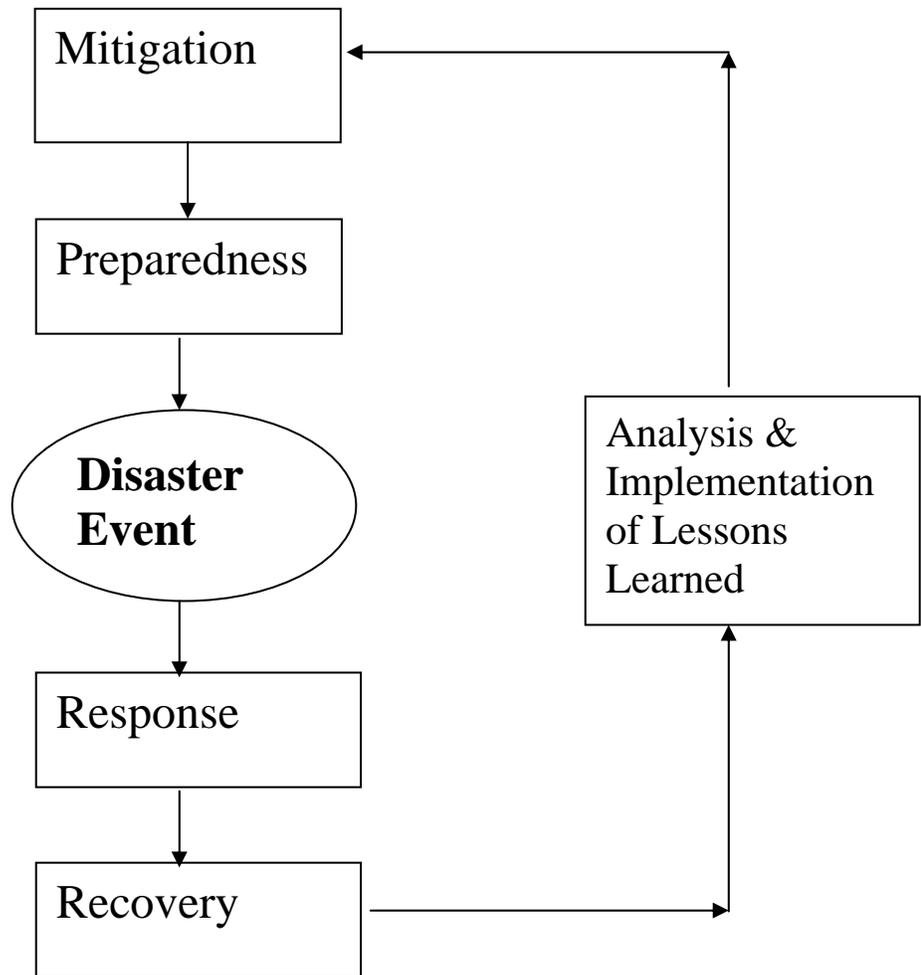


Figure 1.8. Post Disaster Mitigation Under the 1988 Stafford Act. Source: Godschalk et al. 1999

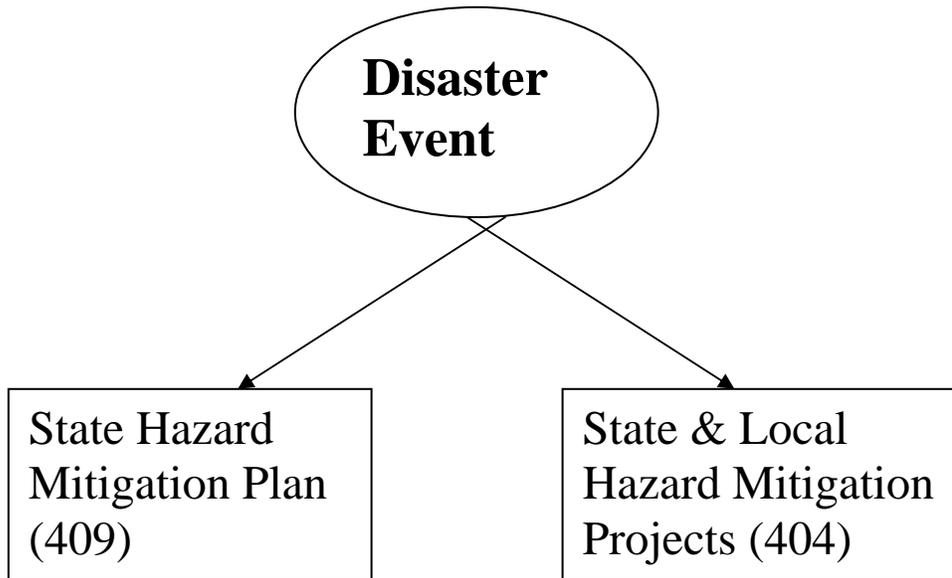


Figure 1.9. Intergovernmental System for Hazard Mitigation in Theory. Source: Godschalk et al. 1999

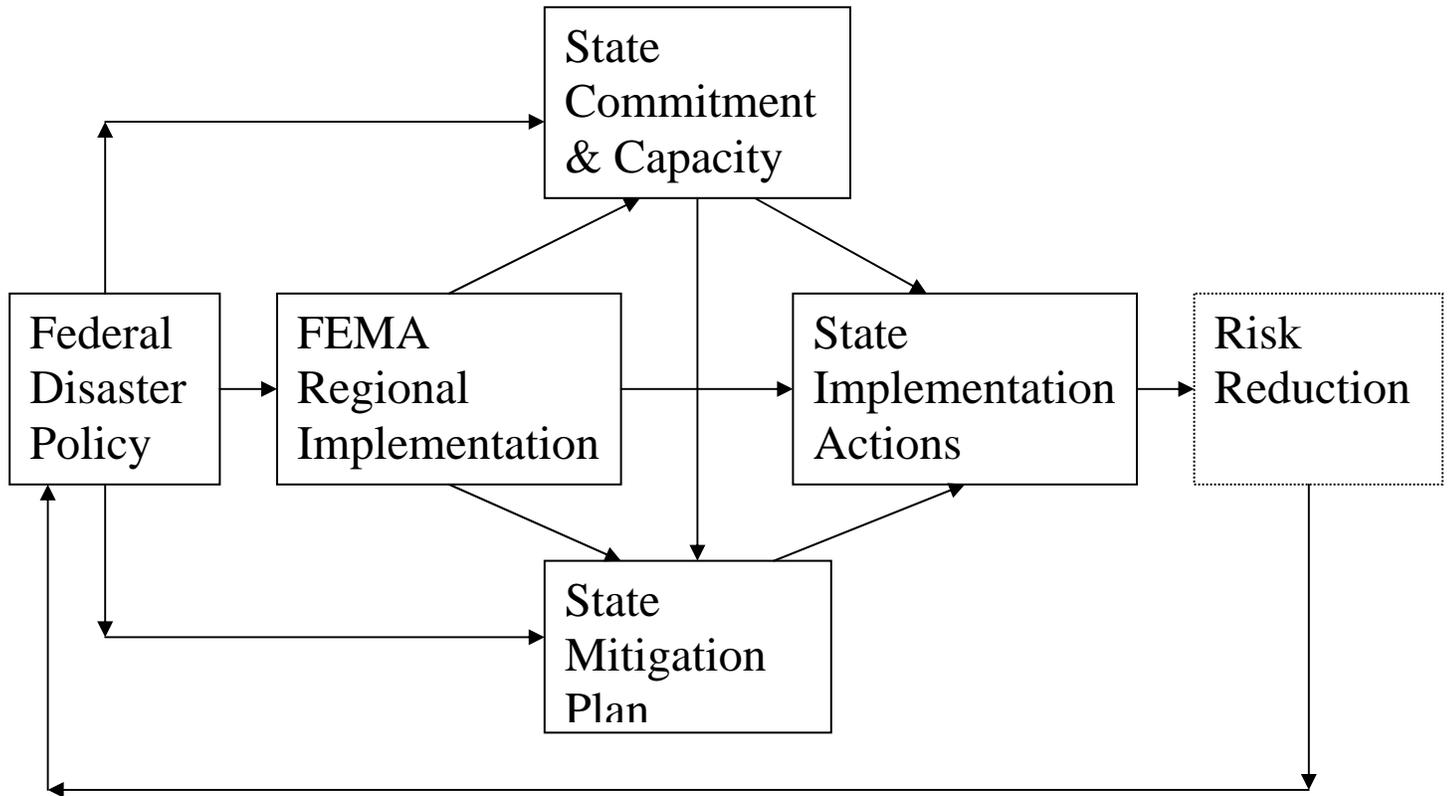


Figure 1.10. Mitigation Capacity and Commitment

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