

Session 2

Holistic Disaster Recovery: Creating a More Sustainable Future

Session 2: Defining sustainable disaster recovery

Time: 3 hours

(Slide 2-1)

Objectives:

- 2.1 Define sustainable disaster recovery, including related terms**
 - 2.2 Begin to describe the impacts of disasters and the complexities of recovery**
 - 2.3 Revisit principles discussed to this point and introduce Session 3**
-

Scope:

The purpose of the second 3-hour session is to introduce key terms associated with sustainable disaster recovery, describe the individual, social, economic, and environmental impacts of disasters, and begin to describe the complexities of recovery utilizing case studies.

Readings:

Student Reading:

Beatley, Timothy. 1998. "The Vision of Sustainable Communities." Chapter 8. Pp. 233-262. In *Cooperating with Nature: Confronting Natural Hazards with Land Use Planning for Sustainable Communities*. Editor: Raymond Burby. Joseph Henry Press: Washington, D.C.

Becker, William S. and Roberta Stauffer. 1994. *Rebuilding the Future – A Guide to Sustainable Redevelopment for Disaster-Affected Communities*. Golden, Colorado: U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Center of Excellence for Sustainable Development.

- Berke, Philip and Dennis Wenger. 1991. *Linking Hurricane Disaster Recovery to Sustainable Development Strategies: Montserrat, West Indies*. Hazard Reduction and Recovery Center: Texas A&M University, College Station, Texas.
- Cutter, Susan. 1996. Vulnerability to Environmental Hazards. *Progress in Human Geography*. 20 (4): 529-539.
- Eadie, Charles. Loma Prieta in Santa Cruz and Watsonville, California. Pp.281-310, Chapter 12, In *Planning for Post Disaster Recovery and Reconstruction*. 1998, Jim Schwab, et. al..
- Eadie, Charles, Rod E. Emmer, Ann-Margaret Esnard, Sarah Michaels, Jacquelyn Monday, Clancy Philipsborn, Brenda Phillips, David Salvesen. 2001. *Holistic Disaster Recovery: Ideas for Building Local Sustainability After a Natural Disaster*. Natural Hazards Research and Applications Information Center, University of Colorado, Boulder. Chapter 1, Introduction to Sustainability. Pp.1-1 – 1-11.
- Federal Emergency Management Agency. September 2000. Planning for a Sustainable Future: The Link Between Hazard Mitigation and Livability. Document #364.
- The Heinz III Center for Science, Economics and the Environment. 2002. *Human Links to Coastal Disasters*. Chapter 3, Human Impacts of Disasters. Pp. 57-77. Chapter 4. Community and Institutional Impacts. Pp.78-111
- Mileti, Dennis. 1999. *Disasters by Design: A Reassessment of Natural Hazards in the United States*. Chapter 1, “A Sustainable Framework for Natural and Technological Hazards.” Pp. 17-39. Chapter 3, “Losses, Costs, and Impacts.” Pp. 65-104. Chapter 4, “The Interactive Structure of Hazard.” Pp.105-133. Joseph Henry Press: Washington, D.C.

Instructor Reading:

In addition to student readings, the instructor may choose to review the following Emergency Management Institute, Higher Education Course:

- Burby, Raymond. 2001. *Building Disaster Resilient and Sustainable Communities*. 2001. Federal Emergency Management Agency, Emergency Management Institute, Higher Education Project. The course is available online at: <http://training.fema.gov/emiweb/edu/completeCourses.asp>.

Objective 2.1 Define sustainable recovery, including related terms

General Requirements:

Remarks:

In addition to defining key terms, the instructor should discuss how the concepts of sustainability, disaster recovery and hazard mitigation are interrelated. The terms disaster resistance, disaster resilience and hazard mitigation should be presented in a manner that elicits dialogue among students. Additional terms are defined and discussed in order to gain a greater contextual understanding of sustainable recovery within the larger framework of emergency management and disasters.

Key Terms and Definitions

The study of *disaster recovery* is perhaps the least understood part of the widely recognized *four phases of emergency management* (Berke, Kartez, and Wenger 1994). Disaster recovery encompasses a range of elements, including the restoration of all aspects of public services and the reconstruction of damaged or destroyed housing and public infrastructure. It also includes “repairing” or “reconstructing” people’s lives and their sense of community, while addressing social, economic, and environmental concerns.

Note: Several definitions are listed below in order to foster a discussion regarding the differing interpretations of recovery and related terminology.

(Slides 2-2 to 2-6)

Disaster Recovery

Recovery can be defined as the restoration and repair of the physical, or built environment as definition # 1 suggests:

Definition # 1: “The process of restoring normal public or utility services following a disaster, perhaps starting during but extending beyond the emergency period to that point when the vast majority of such services, including electricity, water, communications, and public transportation, have resumed normal operations. Short-term recovery does not include the reconstruction of the built environment, although reconstruction may commence during this period. Long-term recovery (see reconstruction) is the process of returning the community, to the extent possible, to the conditions that existed prior to the event, preferably while taking the opportunity to mitigate against future disasters” (Eadie, et. al. p.329).

Reconstruction: “The long-term process of rebuilding the community’s destroyed or damaged housing stock, commercial and industrial buildings, public facilities, and other structures. As used here, it is the last phase of the community’s reaction to the natural disaster. This process is also sometimes referred to as ‘long-term recovery’” (Eadie, et. al. p.328).

Definition # 2:

A more accurate definition of disaster recovery is one that more closely describes the numerous challenges faced by individuals, families, organizations, communities, and states following disasters. Disaster recovery is the process of restoring, rebuilding and reshaping the physical, social, economic, and natural environment following a disaster.

Restoration implies getting things back to normal. **This concept can be applied to the broad components of recovery, including:**

- The repair of damaged housing, infrastructure or commercial buildings.
- The restoration of an individual or family’s psychological well being. Similarly, disrupted social networks may need repair.

The reconstruction of a neighborhood or community also involves a form of social-psychological restoration. For example, the physical reconstruction process can have the effect of restoring one’s sense of place, re-establishing community pride, and restoring the local economy. **Examples may include:**

- The reconstruction of community icons (e.g. commemorative structures and locations that are linked to a communities past)
- Reconstructing or repairing places of worship, community centers, sports and recreational facilities
- The construction of a facility or the dedication of a public space commemorating those affected by the disaster
- Rebuilding in a manner that encourages new economic investment (e.g. the initiation of a post-disaster downtown revitalization effort)
- Restoring the economy may involve an assessment of the regional economic impact on tourism dollars lost as a result of a hurricane and initiating an outreach campaign encouraging tourists to return.

- Restoring natural systems may involve repairing environmental damages caused as a result of structures located within the environmentally sensitive areas. For example, waste water treatment plants are often located in the floodplain (due to the use of gravity flow systems). If a plant is flooded and power systems are not adequately protected, it may result in the discharge of untreated human waste into nearby streams and rivers.

Rebuilding a home, neighborhood, community, or region typically implies the physical reconstruction of the built environment. Specific examples may include:

- Rebuilding or repairing damaged infrastructure, including water, sewer and electrical service delivery systems
- Rebuilding or repairing homes damaged following a disaster
- Rebuilding or repairing businesses and related distribution systems
- Rebuilding or repairing community assets such as parks, public buildings, etc.

Reshaping a community implies changing the way things were before the disaster. The eventual path a community chooses to take during recovery can enhance or limit sustainability. **Factors to consider during this process include:**

- ***Playing an active role in recovery.*** In those instances when a community does not play an active role in recovery, or poor, often short-sided decisions are made, the recovery process can lead to shoddy reconstruction, a loss of jobs or housing, the failure to assist the most needy (or least powerful) recover, or the failure to incorporate mitigation into the rebuilding process.
- ***Land-use planning.*** Poor post-disaster land use decisions can simply perpetuate the problems by rebuilding in known hazard areas, leading to a continued cycle of disasters – repair – disaster. In some cases maintaining current land use practices can encourage further development in hazardous locations, making the community more vulnerable to future events than they were prior to the disaster.
- ***Wise use of federal, state and local funding and expenditures.*** Capitalizing on federal, state and local dollars, including their creative use can facilitate a sustainable recovery. Crafting a comprehensive and coordinated use of recovery funding can provide post-disaster opportunities to enhance economic, social, environmental and recreational benefits. Similarly, continued investments in known high hazard areas will likely result in an unsustainable development pattern subject to future losses.

(Slide 2-7)

Discussion topic: Students should critique the recovery definitions by comparing and contrasting the key factors discussed in each. Definition #1 focuses on the restoration of services, the reconstruction of the built environment and the introduction of short and long-term recovery. While the definition of long-term recovery alludes to the process of returning to some sense of normalcy, it does not fully address the recovery process in the context of social, economic, and environmental factors.

Communities can, and do, choose different paths to recovery:

- In many cases, communities fail to return to their pre-disaster condition. Instead, a disaster often represents a physical, psychological, and social wound that never fully heals.
- The post-disaster environment provides savvy communities an unprecedented opportunity to improve (sometimes dramatically) the overall quality of life for its residents, enhance local economies, and improve environmental conditions.

(Slide 2-8)

Sustainable Disaster Recovery is a process undertaken by a range of stakeholders, moving beyond the basic reconstruction of the community, region, or state to its pre-disaster condition.

- Social, economic, environmental, recreational, and other community goals can be achieved during recovery, resulting in a community that is a better place to live, work, and play than it was before the disaster.
- The choices made following a disaster can enhance not only the lives of those facing the long road to recovery, but also the lives of future generations.

The first widely recognized definition of sustainability can be found in the findings of the World Commission on Environment and Development (often referred to as the Bruntland Commission):

“Meeting the needs of the present without compromising the ability of future generations to meet their own needs” (1987, p 188).

Sustainability and Disaster Recovery:

- The concept of sustainability is comprised of several key elements including:
 - Environmental;
 - Economic; and
 - Social factors.
- The elements are not seen as competing with one another. Rather, under the proper circumstances, they are complimentary.
 - An economy can thrive and still do so in an environmentally sustainable manner.
 - Economic and environmental stewardship can be achieved in a way that embraces the social makeup of a community.
 - The ability of communities, states and nations to incorporate these principles into day-to-day operations, including those following disasters can lead to more socially, economically, and environmentally sustainable communities.

(Slide 2-9)

Dennis Mileti, in the book *Disasters by Design*, outlines a framework for “sustainable hazards mitigation” in which several principles are intended to integrate mitigation into the larger sphere of sustainability:

- Maintain and, if possible, enhance environmental quality;
- Maintain, and, if possible, enhance people’s quality of life;
- Foster local resiliency to and responsibility for disasters;
- Recognize that sustainable, vital local economies are essential;
- Identify and ensure inter- and intragenerational equity; and
- Adopt a consensus-building approach, starting at the local level (pp.30-35, 1999).

The principles outlined by Mileti are directly applicable to the sphere of disaster recovery. Simply stated, sustainable disaster recovery refers to making communities better places to live than they were before the disaster, including making them more *disaster resilient* - taking action to make people, property and the environment less susceptible to the damaging impacts of a disaster. Resilience implies an ability to “bounce back” or recovery more quickly and comprehensively than others who have not embraced this concept.

The term *disaster resistance*¹ implies taking a less flexible approach, armoring the community against hazards rather than seeking innovative ways to build back in a way that is more in harmony with nature. This approach can set the stage for more costly disasters in the future. For example, the reliance on levees to keep water away from developed areas is more akin to an approach emphasizing disaster resistant techniques. Guiding development away from known high hazard areas more closely approximates disaster resilience.

Discussion topic: The instructor should discuss the use of disaster resistance versus disaster resilience as a means to describe hazard mitigation and sustainable recovery. One topic to be discussed may include why FEMA chose to embrace the term disaster resistance, while many in academia tend to use the term disaster resilience.

Both examples describe *hazard mitigation*, which plays a key role in sustainable disaster recovery.

(Slide 2-10)

Hazard mitigation:

- An action taken by an individual, group or organization that reduces the impact of natural and human-caused hazards.²
- Sustained action taken to reduce or eliminate the long-term risk to human life and property from natural hazards and their effects (FEMA).

¹ Project Impact, created by FEMA in 1997, emphasized the creation of “disaster resistant communities.” In actuality, the federal program sought to reduce the effects of natural hazards on communities across the country, focusing on the role of public awareness and building public-private partnerships. The phrase disaster-resistant communities was used in an attempt to describe hazard mitigation in a manner that would be understood by the general public. It was not intended to represent a strict reliance on structural mitigation measures. Rather, Project Impact emphasized gaining public support to implement a range of mitigation measures based on a greater understanding of how hazards can affect a community.

² Human-caused hazards may include technological accidents or acts of terrorism. Technological accidents are unintentional events that may occur at a fixed (e.g. chemical plant or oil refinery releases or explosions, nuclear plant, factory, etc.) or mobile (e.g. train, truck, ship or aircraft) site. Events may include chemical, biological or nuclear releases, explosions, or fire. Terrorist acts are intentionally designed to damage targeted locations or facilities, or injure or kill individuals.

- **Hazard mitigation measures can be broadly categorized to include:**
 - Structural; and
 - Non structural techniques.

Structural techniques may include levees, seawalls, or strengthening buildings. Non-structural techniques may include acquiring flood-prone structures, public awareness campaigns, and planning.

- Sustainable disaster recovery involves taking advantage of **post-disaster opportunities** to implement techniques and take action that not only reduces the impact of future events, but achieves identified community goals.
 - Opportunities may exist to simultaneously improve sub-standard housing and dilapidated infrastructure, improve the local economy, enhance environmental quality and address social concerns.
 - **Multi-objective planning** can be optimized post-disaster, particularly when complimentary objectives are identified (ideally pre-disaster) and linked to disaster aid programs and “sold” to community leaders who may be more receptive to take action to address long-standing issues in the community that have been exposed by the disaster.
 - **Presidential disaster declarations** can trigger large sums of federal and State assistance that can be used to implement identified projects.
- **Self reliance** can be used to help define a sustainable community. That is, a self-reliant community may take action that not only makes them less vulnerable to the impacts of natural hazards; they are less vulnerable to economic, social and environmental problems.
 - The reliance on outside sources of funding to enact change should be balanced by a commitment to use local resources, expertise and political will to implement and sustain the effort.
 - Disasters represent episodic periods of rapid change. Sustainability should be viewed as an on-going philosophy guiding the day-to-day actions of a community.
 - A well-thought out **disaster recovery plan** can serve to identify local and external resources and link them to community goals, thereby taking advantage of the post-disaster window of opportunity. The plan should serve as a roadmap, guiding the actions of the community. The role of planning in recovery will be discussed in Session 9.

(Slide 2-11)

Discussion topic: Discuss the role of self reliance versus taking advantage of post-disaster financial opportunities. Are the two concepts at odds with one another when considering the characteristics of a sustainable community? **Talking points may include:**

- Post disaster funding represents an opportunity to significantly reshape or rebuild a community that would otherwise take years or even decades to achieve.
- Communities that over rely on federal assistance may unnecessarily limit the scope of locally-driven ideas and affordable actions that can be identified through public discourse.
- Over time, communities and individuals may view disaster recovery programs as an entitlement, thereby reducing their commitment to become more self reliant (see Session 10). Moving toward a more self reliant household, community or state includes making difficult decisions that may run counter to years of development trends, land use patterns or economic boosterism that fails to acknowledge the true costs of development in high hazard areas.
- Ideally, a community will have developed a comprehensive participatory planning process that has identified a range of short and long-term goals leading to a more sustainable community. A pre-existing plan would help facilitate the potential implementation of desired objectives should funding become available.

(Slide 2-12)

Hazard:

An event or physical condition that has the potential to cause fatalities, injuries, property damage, infrastructure damage, agricultural loss, damage to the environment, interruption of businesses, or other forms of harm or loss (FEMA).

- In the context of this course, a natural hazard refers to natural phenomena such as a flood, earthquake, hurricane, tornado, wildfire, drought, or winter storm.
- It is important to note that a natural hazard is part of a larger natural system.
- The occurrence of a natural hazard does not necessarily result in physical harm to people or the built environment. In fact, natural hazards play an important environmental function, transporting needed rainfall, or reshaping our coastal barrier islands.

- It is when a hazard intersects with the human environment that it can cause harm. If the damages are great enough, the event may result in a disaster.
- Recognizing the benefits as well as human costs associated with hazards is important in order to better understand how we can co-exist within the larger natural system.

(Slide 2-13)

Discussion topic: The instructor should discuss the concept that there is no such thing as a “natural disaster.”³ That is, disasters occur only when natural events infringe on the built or human-made environment. This debate, of course, hinges on the dual meaning of the word natural (e.g. normal or expected versus hazards being part of the natural world).

Talking points include:

- Natural hazards are an important part of a sustainable ecosystem;
- Conversely, an argument can be made for the occurrence of an “environmental disaster,” such as a drought, that may or may not affect people or the built environment; and
- Humans are part of the natural order and therefore, disasters that affect us are, in fact, natural.

(Slide 2-14)

Disaster:

A disaster can be described as an event causing damages, injuries, or loss of life on a scale that exceeds the capacity of assigned organizational units (typically emergency services) to effectively respond to and recover from without additional help from additional shifts within the affected local government. Conversely, accidents, incidents and emergencies can be responded to with existing emergency services personnel. A large-scale disaster may require outside assistance.⁴ This form of aid may be provided by adjacent communities, state or federal agencies or through agreed upon mutual aid compacts.

³ The instructor may choose to refer to the Worldwatch Institute Paper 158, *Unnatural Disasters* (2001) as a means to address the discussion topic.

⁴ For an extensive discussion on the topic of defining disasters, refer to *What is a Disaster? Perspectives on the Question* (Quarantelli 1998).

FEMA defines disaster as: An occurrence of a severity and magnitude that normally results in deaths, injuries, and property damage and that *cannot be managed through the routine procedures and resources of government*. [Emphasis is author's] It usually develops suddenly and unexpectedly and requires immediate, coordinated, and effective response by multiple government and private sector organizations to meet human needs and speed recovery (see Auf der Heide 1989, p. 51)

- It is important to note that localized disasters regularly occur across the United States, often affecting an individual jurisdiction.
- State and federal disaster declarations occur much less frequently than localized disasters. According to the National Emergency Management Association approximately 10% of disasters in the United States receive a state disaster declaration. The remaining 90% are addressed using local resources.
- Disasters differ greatly depending on the scale and temporal nature of the event.
 - For example, if a localized event exceeds the capacity of a local government to effectively respond to and recover from without outside assistance, it may be deemed a state-declared disaster, triggering state assistance. If the damages meet an established damage/per capita threshold, it may merit a federal disaster declaration, whereby federal assistance is provided.
 - According to the Stafford Act, which governs the federal response to disasters, a disaster (meriting federal assistance) can be defined as: “any natural catastrophe (including any hurricane, tornado, storm, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, or drought), or regardless of cause, any fire, flood or explosion in any part of the United States, which in the determination of the president causes damage of sufficient severity and magnitude to warrant major disaster assistance under this act to supplement the efforts and available resources of states, local governments, and disaster relief organizations in alleviating the damages, loss, hardship, or suffering caused thereby.”
- The disaster declaration process can become highly politicized. Federal disaster declarations are followed by technical assistance, aid, and large sums of money.
 - Awarding disaster assistance can be used as political capital for those politicians claiming responsibility for the provision of federal dollars to their constituency.
 - Due, in part to political pressure, disaster declarations can prove subjective, rather than based on a standardized threshold.

- For additional information on this topic, refer to Rutherford Platt's Book, *Disasters and Democracy: The Politics of Extreme Natural Events* (1999). The politics of disasters will be discussed in Sessions 8 and 10.

Emergency:

The Stafford Act defines an emergency as “any occasion or instance for which, in the determination of the president, federal assistance is needed to supplement state and local efforts and capabilities to save lives and protect property and public health and safety, or to avert the threat of a catastrophe in any part of the United States.”

- This definition can be misleading. Unlike a disaster, a more accurate definition of ***emergency*** is a localized event that may require an immediate response from emergency management officials, but does not exceed the capacity of municipal governments.
- Making the distinction between disasters and emergencies can be difficult and highly contentious, since a disaster declaration is usually followed by an infusion of state and federal aid.

(Slide 2-15)

Discussion topic: Students should characterize the difference between disasters and emergencies, including the varied definitions presented here and why they think differing terminology is used to explain the same terms. **The characteristics of emergencies include:**

- Emergencies are typically localized events;
- Emergencies typically require a short-term response, and do not involve a long-term recovery;
- Emergencies do not typically require assistance from the state or federal government; and
- In larger events, additional assistance may be required from adjacent jurisdictions on a short-term basis.

The characteristics of disasters include:

- Disasters require the assistance of additional governmental units beyond emergency services to effectively respond to and recover from the event;
- Disasters are typically characterized by a long-term recovery process; and

- State and federally-declared disasters affect multiple jurisdictions, states and broader geographic regions.

(Slide 2-16)

At this point, the instructor should introduce students to the *four phases of emergency management*, including a critical analysis of its accuracy in accurately describing *disasters, emergencies*, and the *recovery process*, more specifically. While certain guiding principles exist which will be discussed in later sessions, it is important to establish the variable nature of recovery, its complexities, and how the nature of the disaster, the people it affects, and the institutions designed to aid in recovery, shape the process and eventual outcomes.

Four Phases of Emergency Management:

Historically, emergency management has been described as occurring in four phases - preparedness, response, recovery, and mitigation. Like all models, this represents a simplified version of reality. It still, however, offers a means to introduce students to the basic elements found in emergency management.

Preparedness – In the broadest sense, preparedness implies being ready to confront the challenges associated with an emergency or disaster. The degree to which an individual, organization, community, state or nation is prepared cuts across response, recovery and mitigation-related tasks. For example, to what degree is your local emergency management agency ready to respond to, recovery from or mitigate against the impacts of a disaster? Specific examples may include distributing preparedness materials, maintaining resource inventories, testing warning systems and creating a “disaster survival kit” for yourself or family.

Response – Actions taken in the immediate aftermath of an emergency or disaster. Specific actions may involve search and rescue activities, deploying staff or other resources to an affected area, setting up emergency shelters, and providing food for the displaced. In the case of larger events, the response “phase” may last several days, weeks or even months.

Recovery – See definitions above

Mitigation – See definitions above

A modified representation of this linear model found in Planning for Post-Disaster Recovery and Reconstruction (Schwab, et. al. 1998 page 17) more closely approximates the principles associated with sustainable recovery and the key roles of pre and post-disaster hazard mitigation and planning for post-disaster recovery.

Note: Like the Four Phases of Emergency Management, the description of the recovery process as a series of orderly steps is not entirely accurate representation of actual events. More recent research has shown that the speed and breadth of recovery varies across social groups based on their access to resources and power. Session 3 will discuss these issues in detail.

(Slide 2-17)

Discussion topic: Engage students in a dialogue concerning the strengths and limitations of the four phases of emergency management model in describing reality. The instructor may choose to revisit this discussion later in the course. The instructor may require that students prepare a well thought out critique (no longer than 5 pages) and present their findings to the class in Session 3.

Specific factors to consider may include:

- Emergency management does not necessarily follow a sequential pattern of activities. Rather, preparedness, response, recovery and mitigation can occur at differing periods of a disaster cycle, and may include significant periods of overlap.
 - The phases of emergency management model provides a sound means to explain the key functions of emergency managers and those involved in emergency management-related duties.
 - The phases of emergency management model does not capture profession of emergency management as it has evolved over time to more accurately reflect a hazards management approach.
-

(Slide 2-18)

Objective 2.2 Describe the impacts of disasters and the complexities of recovery

Disasters can affect individuals, families, organizations, communities, regions, states and entire countries. **For the purposes of discussion, disaster-related impacts are categorized in the following manner:**

- Psycho-social;
- Housing;
- Community;
- Economic;

- Environmental/Public Health; and
- Political.

(Slide 2-19)

Psycho-social Impacts

Post disaster stress can manifest itself in a variety of ways. Examples include an increased level of drinking, spousal or child abuse and neglect. Feelings of fear, anger and anxiety are often reported following a disaster among both disaster victims and emergency management professionals. The degree to which individuals and groups are susceptible to harm from hazards is defined as *social vulnerability*. Specific individual characteristics may include age, gender, race, access to power, health and personal habits, whereas community-level characteristics may include urbanization, racial inequalities, poverty and wealth (Cutter 1996).

Stresses may result from the following conditions:

- The recognition that people in their community may have been injured or killed;
- A sense of guilt that their life or home was spared;
- A disruption of normal day-to-day activities including school, work, or recreation;
- Damages sustained to property, particularly those involving the home and family heirlooms;
- Disruption of a community's sense of place, due to the damage or destruction of widely recognized landmarks and community symbols;
- Disruption of public services such as water, sewer, electricity; and
- Living in a shelter or temporary housing (living in close proximity with strangers or relatives can be stressful!).

(Slide 2-20)

Disasters can also undermine or strengthen existing social networks.

- The physical dislocation of individuals living in a close-knit community can limit interaction among family and friends that serve as an important support network.
- In other cases a disaster may bring a community together, providing a common, unifying purpose.

- Neighbors may find themselves helping others that they have never met.
- Church leaders and non-profit agencies often take the lead in providing services for those in need of counseling, food or shelter.

(Slide 2-21)

Housing Impacts

Housing issues are among the most contentious aspects of recovery. Individuals, non-profit agencies and local, state and federal officials often spend a great deal of their time grappling with housing-related challenges. Housing issues may include:

- The provision of adequate (number, size, comfort, privacy, safety) public shelters;
- The provision of temporary housing units (typically mobile homes) for displaced residents;
- The identification of sustainable temporary housing, including adequate size, amenities, cost, proximity to work and school;
- The condemnation of structurally unsound housing;
- The pressure to quickly repair damaged housing rather than taking the time to conduct a structural assessment or attempt to incorporate hazard mitigation measures into reconstruction;
- The possible implementation of a temporary building moratorium;
- Individual choices surrounding the potential acquisition or elevation of one's home following a flood;
- The identification and equitable distribution of housing-related recovery assistance;
- Mobile home issues, including their relative safety versus "stick-built housing," the potential elimination of mobile home parks following disasters, and the stigma associated with their use as temporary housing;
- Requirements tied to the rebuilding of a substantially damaged (more than 50% damaged) home back to existing, perhaps more stringent building or National Flood Insurance Program codes; and
- The equitable reconstruction of housing that accounts for the needs of people of differing classes, wealth, and race.

(Slide 2-22)

Community Impacts

Community-level impacts include direct and indirect effects to structures, infrastructure and public services. For example, damages can limit the provision of emergency services crucial to an effective response. Community impacts may include:

- Damages to public infrastructure (e.g. electrical substations, water and waste water treatment systems, fire station, shopping center, or school);
- Damages to transportation networks, limiting travel and the distribution of goods and services;
- Damages to businesses, which can affect the local economy and the ability of residents and others to obtain essential and desired goods and services;
- Damages that affect the provision of public services such as banking and sporting events;

(Slide 2-23)

Economic Impacts

The effect of a disaster has differential impacts on individual, local, regional and state economies depending on its scale. Economic issues may include:

- Differential impacts on individuals and families. Following a disaster, some individuals and families, particularly the poor, may never fully recovery economically. **Factors hindering economic recovery include:**
 - The lack of insurance (flood insurance, homeowners insurance);
 - The inability to qualify for certain recovery loan programs;
 - The unwillingness to acquire additional debt (loans);
 - Difficulty finding work if their employer is affected; and
 - Lack of adequate savings to finance needed housing repairs and additional costs associated with recovery (property loss, temporary housing, etc.).

- Business-related impacts. Small businesses are less likely to recover financially than larger businesses or corporations;
- The affect of disasters on agricultural economies. Floods, droughts, ice and hail storms as well as high winds can damage crops and injure or kill livestock;

(Slide 2-24)

- Impacts to infrastructure, including roads, electricity, water, etc. can cause major economic disruptions;
- Temporary or permanent loss of jobs;
- Industry-specific impacts, such as the loss of tourist dollars along the coast following a major hurricane;
- Indirect economic impacts may include the loss of purchasing power of employees who are temporarily out of work, or a supplier of raw goods who sells to an impacted business

(Slide 2-25)

Environmental/Public Health Impacts

Detrimental environmental impacts are usually associated with public health-related issues. When structures are placed in harms way and they are damaged or destroyed, the surrounding environment can be affected. Public health issues frequently surface due to unsanitary conditions. Specific factors may include:

- Contaminated drinking water;
- Accumulated disaster-related debris (e.g. damaged structures, dead livestock,); or
- Physical damages to public facilities that cause secondary effects (e.g. the release of human waste into nearby rivers or streams).

(Slide 2-26)

Conversely, natural hazards can be thought of as part of a larger natural system. In many cases, high hazard areas are environmentally sensitive. Specific examples include:

- Wetlands;
- Floodplains;
- Steep sloped areas;
- Wildland urban fire interface; and
- Barrier islands.

(Slide 2-27)

Hazards play an important role in seeking a broader regional or global equilibrium. For example:

- Floods help transport fertile topsoil downstream;
- Hurricanes transfer heat from the tropics to northern climates and transport water in the form of rainfall to gulf coast and eastern states;
- Earthquakes and volcanoes release pent up energy. Volcanoes release ash and lava.⁵ Both alter existing landscapes and form new land masses; and
- Regularly occurring wildfires are part of a healthy forest ecosystem, leading to greater biodiversity.

⁵ The release of ash may result in fertile soil conditions surrounding volcanoes.

(Slide 2-28)

Specific impacts, both positive and negative, may include:

Positive environmental impacts -

- Excessive rainfall may help to recharge aquifers or alleviate drought conditions;
- High winds may topple exotic tree species that are not native to the area;
- Coastal storms help transport sand across barrier islands as part of their natural migration towards the mainland;
- Wildfires burn accumulated undergrowth and add nutrients to the soil.

(Slide 2-29)

Negative environmental impacts -

- Release of household chemicals into the environment due to floodwaters entering homes and garages;
- Release of untreated waste water following an extended power outage;
- Release of industrial or agricultural chemicals into the environment following a flood, fire or high wind event;
- **Public health and safety issues may include:**
 - The potential contamination of drinking water wells;
 - The exposure of asbestos in buildings, homes and other structures; and
 - The growth of mold in flood-damaged homes
- Human and animal waste releases following a flood;
- Animal carcasses due to drowning, power outages, or blunt trauma;
- Hazardous material spills, which may result from floods, high winds, or earthquakes; and
- High concentrations of mixed debris (including “friable” asbestos, and household or industrial chemicals) taken to the landfill.

(Slide 2-30)

Political Impacts

Disasters are highly politicized events, due to their impact on local constituent groups, public expectations regarding the role of government, and readily available federal assistance. Specific political impacts may include:

- Public expectations which may exceed the ability of local, state or federal government agencies;
- The perceived inequitable distribution of disaster assistance. Apparent or actual inequities may include aid based on income, race, wealth, or social status;
- The role of the media in shaping public perceptions and reactionary policy making of public officials; and
- The significant gain or loss of political capital among elected officials associated with chosen recovery actions, including the procurement of disaster assistance funding or the failure to adequately address constituent needs. This occurs at all levels of government.

(Slide 2-31)

Discussion topic: The instructor should engage students in a discussion of how disaster impacts are interrelated. Emphasis should include the sustainable recovery framework discussed in class and described in assigned readings. **Talking points may include the following examples:**

- The psycho-social attachment to one's place of residence or community;
- The role of a sound economy on an area's sense of community;
- The connection between a healthy environment and the economy; and
- The political nature of housing repair.

(Slide 2-32)

Case Study Exercise

The case study that follows is intended to help clarify disaster-related impacts and explain the complexities of disaster recovery. In addition, the case study will help lay the foundation for additional topics discussed in more detail throughout the course.

Case Study: Loma Prieta in Santa Cruz and Watsonville, California

Instructor and Student Reading:

Charles Eadie, pp.281-310, Chapter 12, In *Planning for Post Disaster Recovery and Reconstruction* 1998, Jim Schwab, et. al.).

The case study should be used by the instructor to begin clarifying what disaster recovery is, including the more complex issues and concepts that will be further explained throughout the course. **Materials covered to this point should be applied as they relate to the following topics:**

- The physical, economic and social impacts of disaster;
- Emergency response as a prelude to the initiation of recovery;
- The temporal nature of recovery (short and long term);
- The role of hazard mitigation in recovery;
- The politics of recovery; and
- Lessons learned.

Remarks:

The instructor may choose from two instructional methods to help explain the six topics noted above:

- Using a standard lecture format, compare and contrast the two paths to recovery taken by Santa Cruz and Watsonville, California following the Loma Prieta Earthquake. Students should be expected to apply the terms and concepts discussed to this point to the case study discussion.
- Following a class discussion of the case study, students are required to conduct research beyond that provided in *Planning for Post-Disaster Recovery and Reconstruction*, writing a brief report (approximately 5 pages) discussing the degree to which the communities adopted sustainable recovery principles.

(Slide 2-33)

Objective 2.3 Revisit principles discussed in the session

Remarks:

The instructor is encouraged to summarize principles discussed in the current session and set the stage for the next class. Each session is designed to build on information discussed up to this point in the course. The instructor should therefore, discuss how the concepts of sustainable disaster recovery and the issues addressed in the case studies relate to Session 3: Dimensions of Recovery

- 3.1 The disaster recovery process**
- 3.2 Disasters as opportunity**
- 3.3 Short-term versus long-term perspectives**
- 3.4 Disasters as a clarification agent, highlighting existing or underlying local, state and federal characteristics**

Note: The end of the session provides an opportunity for the instructor to answer questions students may have regarding topics discussed to this point or future assignments.

References

- Abramovitz, Janet N. 2001. *Unnatural Disasters*. Worldwatch Paper 158. Worldwatch Institute: Washington D.C.
- Auf der Heide. 1989. *Disaster Response: Principles of Preparation and Coordination*. The C.V. Mosby Company: St. Louis.
- Cutter, Susan. 1996. Vulnerability to environmental hazards. *Progress in Human Geography*. 20 (4): 529-539.
- Eadie, Charles, Rod E. Emmer, Ann-Margaret Esnard, Sarah Michaels, Jacquelyn Monday, Clancy Philipsborn, Brenda Phillips, David Salvesen. 2001. *Holistic Disaster Recovery: Ideas for Building Local Sustainability After a Natural Disaster*. Natural Hazards Research and Applications Information Center, University of Colorado, Boulder.
- Federal Emergency Management Agency. September 2000. Planning for a Sustainable Future: The Link Between Hazard Mitigation and Livability. Document #364.
- Mileti, Dennis. 1999. *Disasters by Design: A Reassessment of Natural Hazards in the United States*. Joseph Henry Press: Washington, D.C.
- Quarantelli, E.L., ed. 1998. *What is a Disaster? Perspectives on the Question*. London: Routledge.
- Schwab, Jim, Kenneth C. Topping, Charles Eadie, Robert Deyle and Richard Smith. 1998. *Planning for Post-Disaster Recovery and Reconstruction*. PAS Report 483/484, Chicago, Illinois, American Planning Association.