Sustainable Disaster Recovery: Operationalizing An Existing Agenda

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Disaster recovery represents the least understood aspect of emergency management, from the standpoint of both the research community and practitioners (Berke, Kartez, & Wenger, 1993; Rubin, 1991). When compared to the other widely recognized phases of emergency management, that is, preparedness, response, and mitigation, scholars have yet to address fundamental questions, while practitioners have failed to establish an integrated policy framework or utilize readily available tools to improve disaster recovery outcomes (Berke et al., 1993; May and Williams, 1986; Mileti, 1999). Since the 1990s the concept of sustainability has been adopted by hazards researchers and applied to mitigation (Berke, 1995a; Burby, 1998; Godschalk, et. al., 1999; Mileti, 1999), recovery (Becker, 1994a; Berke, Kartez, & Wenger, 1993; Eadie et al., 2001; Oliver-Smith, 1990; Smith, 2004; United States Department of Energy, 1998), and to a lesser extent preparedness and response (Tierney, Lindell, & Perry, 2001). While recognized as a meaningful paradigm among scholars and a limited number of practitioners, achieving sustainable recovery following disasters is not a widespread phenomenon in the United States, owing in large part to the current recovery model in practice today. It is therefore the intent of this chapter to describe an improved policy implementation framework focused on achieving sustainable recovery. Emphasis is placed on the analysis of the United States model of recovery and the development of specific recommendations to improve the process. Key issues and research questions are identified in order to advance this agenda, including the need to develop a theory of recovery that emphasizes specific factors that facilitate or hinder this approach. Next, a review of the literature highlights the fact that while past research has addressed several recognized dimensions of sustainable recovery, the research has not been linked to a unifying theory that helps to clarify our understanding of how sustainable recovery can be achieved.

REVIEW OF THE DISASTER RECOVERY
LITERATURE

Disaster recovery has been analyzed using a variety of perspectives including the role of power in decision making (Olson, 2000; Platt, 1999), the practice of urban planning (Ohlsen & Rubin, 1993; Schwab et al., 1998), the sociology of disaster (Nigg, 1995a; Peacock, Morrow, & Gladwin, 1997), policy implementation (May, 1985; May & Williams, 1986; Olson & Olson, 1993), and more recently the application of sustainable development principles (Becker, 1994a,1994b; Becker & Stauffer, 1994; Berke, Kartez, & Wenger, 1993; Berke & Wenger, 1991; Eadie et al., 2001; Smith, 2004). Yet there exist a surprisingly limited number of theories explaining recovery (Chang, 2005). The widely recognized tenets of sustainability provide a robust and meaningful framework to synthesize the majority of existing disaster recovery research perspectives, develop a new theory of recovery, and outline a future research agenda that is directly applicable to both practitioners and scholars. As Table 14.1 demonstrates, a number of recovery-based studies have been conducted that can be classified across key dimensions of sustainability. Most of the research cited was not intentionally framed in this manner when it was undertaken. Rather, it became apparent during the review of the literature that past research provides important insights into our current understanding of this topic; serving as the roots of sustainable recovery.

Prior to the 1970s, a limited amount of research had been conducted on disaster recovery (Barton, 1969). The current range of research perspectives, including the increasing use of multidisciplinary teams to address complex questions dealing with hazards, can be traced back to the book "Assessment of Research on Natural Hazards" (White & Haas, 1975). The authors sought to evaluate the accumulating knowledge gained by hazards researchers, identify a future research agenda, and provide suggested national policy objectives. While the text clearly demonstrated the need for and use of multidisciplinary research, it did not generate a new paradigm (Mileti, 1999 p. 21).

The use of comparative analysis dominated the research agenda in the late 1970s and early 1980s (Friesemam et al., 1979; Geipel, 1982; Haas, Kates, & Bowden, 1977; Rubin, 1982; Wright et al., 1979). Particular emphasis was placed on the use of case studies to describe the process of recovery at the local level (Haas, Kates, & Bowden, 1977; Rubin, 1985). The Disaster Recovery Project, which focused on 14 localities, studied how local planning and management expedited recovery, the degree to which mitigation techniques were adopted and incorporated into the recovery process, and the extent to which communities sought to improve local conditions (Rubin, 1982; Rubin, Saperstein, & Barbee, 1985). Similarly, Kates and Pijawka (1977) suggest that as part of their four-phased sequential description of the recovery process (emergency period; restoration period; replacement and reconstruction period; and commemorative, betterment, and developmental reconstruction period), the final phase is representative of an opportunity to improve pre-disaster conditions. Today, these findings are considered important components of sustainable recovery (Beatley, 1995, 1998; Mileti, 1999).

Geipel, in his study of recovery following the 1976 earthquake in northern Italy, discovered that disasters serve to highlight existing cultural, social, and economic conditions that shape the path to recovery. In this case, the earthquake exacerbated existing class inequalities among merchants (who gained financially) and the elderly, who struggled to return to their pre-disaster condition. In areas that were the site of ongoing economic activity and growth, post-disaster reconstruction was more prevalent. Areas facing economic decline fell further into disrepair. Conversely, Friesema et al. (1979) argued that disasters caused little long-term

TABLE 14.1. A Summary of Recovery Research Across Key Dimensions of Sustainability

Environmental	Quality of Life	Social	Economic	Disaster Resilience	Participation, Political Process, Power
Pilkey & Dixon, 1996	Bolin (1985)	Quarantelli, 1989, 1999	Comerio, 1998	Burby, 2001; Burby et al., 1998, 1999	Olson, 2000
Burton, Kates, and White, 1993	Geis, 2000	Nakagawa & Shaw, 2004	Kunreuther, 1973	Schwab et al., 1998	Birkland, 1997
Cutter, 2001		Bolin & Stanford, 1998	Geipel, 1982	Beatley, 1995, 1998	Platt, 1999
Rees, 1992	Kates & Pijawka, 1977	Bolin & Bolton, 1986		Olshansky & Kartez, 1998	May & Williams, 1986
Becker, 1994b	Comerio, 2005 Alesch, 2005	Drabek, 1986		Berke, 1995 Mileti, 1999	Rubin & Barbee, 1985 Shaw, Gupta & Sarma, 2003
Phillippi, 1994		Cutter, 1996	Johnson, 2005	Rubin, 1982; Rubin, Saperstein, & Barbee, 1985	Olson & Olson, 1993
Thieler & Bush, 1991		Bolin & Stanford, 1999	Kunreuther & Roth, 1998		Francaviglia, 1978
			Chang & Miles, 2004		Berke, Kartez, & Wenger, 1993
		Peacock, Morrow, & Gladwin, 1997			

impacts, a finding that has been widely challenged (Cutter, 2001; Wright et al., 1979). Geipel also found that citizens envisioned a "post-disaster plan" emphasizing a return to normalcy, which competed with administrators, planners, and other experts who proposed change. The lessons, such as those described by Haas, Kates, and Bowden (1977) and Rubin (1982), suggest early components of a sustainable recovery framework (e.g., public involvement, equity, and the role of pre-disaster planning) as well as conditions that hinder a sustainable recovery, such as differing levels of social vulnerability and power.

A second assessment of hazards research, titled "Disasters by Design: A Reassessment of Natural Hazards in the United States," focused on the principles of "sustainable hazards mitigation" and the utilization of systems theory linking the earth's physical system, human system, and the built environment (Mileti, 1999). Many of the primary objectives described in the text (e.g., build local networks, strive for increased capability and consensus, establish a holistic government framework, and provide comprehensive education and training) are applicable to recovery and serve as elements in the proposed policy implementation framework and theory of recovery discussed later in this chapter.

DEFINING DISASTER RECOVERY

Key terms and definitions are described next, in order to establish a baseline understanding of disaster recovery, followed by a review of the sustainable recovery literature. Emphasis is placed on several important premises and our evolving understanding of this complex topic, including the construction of a new definition that describes the potential to attain sustainable recovery. Early definitions of recovery emphasized that recovery was predictable, made up of identifiable parts occurring in a sequential manner; choices and decisions were value driven; and outcomes (i.e., paths to recovery) emphasized a return to normalcy or the incorporation of those actions that have become more recently associated with sustainability—a reduction of future vulnerability (post-disaster mitigation), equity, and amenity (Haas, Kates, & Bowden, 1977, p. xxvi). However, this definition is an oversimplification of reality and fails to recognize that recovery is not uniformly achieved by all members of society, nor does it always follow a clearly defined path (Quarantelli, 1989a; Sullivan, 2003; Wilson, 1991). In reality, recovery is messy and uncertain. Factors such as power, race, class, gender, past disaster experience, and access to resources, including information, can all play a role in shaping the process for social units ranging from households to societies (Barry, 1997; Bolin, 1985; Francaviglia, 1978; Peacock, Morrow, & Gladwin, 1997; Platt, 1999).

Several definitions of recovery have focused on the repair and restoration of the built environment as well as the temporal differentiation between short- and long-term recovery or reconstruction, including an appreciation of pre-disaster actions such as land use and recovery planning (Rubin & Barbee, 1985; Schwab et al., 1998). Other scholars, such as Nigg (1995a), have argued that recovery involves more than the reconstruction of the built environment. Rather, it is more appropriately defined as a social process shaped by both pre- and post-disaster conditions. Thus, an alternative definition of disaster recovery is one that describes the numerous challenges faced by people and the impacts of disaster on human constructs (i.e., families, groups, organizations, communities, governments, and economies) as well as a description of how natural systems are impacted and "recover" from disaster. It is therefore suggested that disaster recovery can be defined as *the differential process of restoring, rebuilding, and reshaping the physical, social, economic, and natural environment through pre-event planning and post-event actions*. While this definition describes the outcomes associated with

a sustainable disaster recovery, it also recognizes that people, groups, and institutions are affected differently by disasters, and as a result, the overall recovery process is not necessarily linear, nor is it driven predominantly by technical challenges, but rather by social parameters (Nakagawa & Shaw, 2004; Nigg, 1995a.) As a result, people, groups, organizations, communities, governments, economies, and the environment often recover at differing rates, and in some cases fail to reach their pre-disaster condition. Conversely, opportunities exist to recover in a manner that results in recognizable (social, economic, and environmental) improvements over those conditions that were prevalent prior to the event.

SUSTAINABILITY AND DISASTER RECOVERY

Recovery is described next within the context of the new definition provided in the previous section, emphasizing how the concepts of restoration, rebuilding, and reshaping affect sustainable development outcomes. The concept of restoration has historically implied getting back to normal, as Haas, Kates, and Bowden (1977) suggest. Traditional examples include the repair of damaged housing, infrastructure or commercial buildings. As defined here, restoration also applies to the psychosocial conditions found post-disaster, including the ability of an individual or family to regain a sense of well being or to reconnect disrupted social networks. Disasters often precipitate the creation of issue-specific emergent groups, including social networks intended to address perceived shortfalls in the distribution of assistance (Bolin & Stanford, 1999), or those who seek to educate disenfranchised populations about risk and appropriate preparedness activities (Lindell & Perry, 1992).

Understanding the relationship between sustainability, hazards, and disasters requires recognizing both the destructive and regenerative forces of nature. Attempts to restore or protect natural systems must be done in a manner that respects the importance of allowing them to function properly (Beatley, 1998; Burby, 2001; National Science and Technology Council, 1996; Phillippi, 1994; Thieler & Bush, 1991). A review of history and an extensive body of research clearly demonstrates how poor decision making has lead to more damaging disasters (May & Deyle, 1998; Mileti, 1999; Pilkey & Dixon, 1996; Platt, 1998, 1999). The use of levees to modify the Mississippi River floodplain and the intensive armoring of our shorelines represent stark examples of how our actions can result in long-term costs including greater hazard vulnerability and less sustainable communities. Restoring natural systems may involve the removal of existing structures or placing limits on future growth in known hazard areas, thereby maintaining a small "ecological footprint" as Rees (1992) suggests.

An important part of disaster recovery involves the physical reconstruction of the built environment. Specific examples include rebuilding or repairing damaged infrastructure (including water, sewer, and electrical service delivery systems) homes, businesses, and community assets such as parks, public buildings, and community icons. During the reconstruction process, key questions emerge and decisions must be made regarding how this will occur. Numerous options exist, including the repair of damaged structures and supporting infrastructure to their pre-disaster condition, or the incorporation of sustainable redevelopment principles, including hazard mitigation, energy efficiency, or improved local aesthetics (Geis, 2000; Skinner & Becker, 1995). Those that choose to rebuild in a manner that embraces these principles may require changes to past construction practices and land-use patterns, including the type, location, and density of development (Burby et al., 1999; Mader, Spangle, & Blair, 1980). While local, state, and federal laws governing the location and type of development that may

occur in hazard areas exists, the standards and enforcement mechanisms vary widely across the country (Berke & Beatley, 1992; Burby, 1998; Burby & French, 1981; Godschalk, Brower, & Beatley, 1989; Olshansky & Kartez, 1998).

Reshaping a community implies changing the way things were before the disaster. Specific actions taken during the recovery process can enhance or hinder sustainability. The failure to establish clear recovery goals and an effective implementation strategy can lead to shoddy reconstruction, a loss of jobs, a reduction in affordable housing stock, missed opportunities to incorporate mitigation into the rebuilding process, and an inability to assist the neediest recover (Bolin & Bolton, 1986; Comerio, 1998; Peacock, Morrow, & Gladwin, 1997). According to Vale and Campanella (2003), historical evidence suggests that cities recovering from disasters are unlikely to make significant changes to the built environment during reconstruction. Shaw, Gupta, and Sarma (2003) have shown that meaningful change can occur under the appropriate circumstances.

Communities can choose different paths to recovery. In reality, choices are often constrained because of a lack of awareness of the options before them and the failure to involve a wide range of stakeholders in the decision-making process. Recovery practice traditionally emphasizes the management of federal assistance programs rather than a systematic identification of community needs and the development of a comprehensive strategy for long-term recovery and reconstruction (Kartez, 1991; Schwab et al.). As a result, communities often fail to return to their pre-disaster condition, or worse, actions may increase their exposure to hazards, worsen economic conditions, damage natural systems, or exacerbate racial and ethnic tensions. Conversely, the post-disaster environment provides savvy communities with an unprecedented opportunity to improve (sometimes dramatically) the overall quality of life for its residents, enhance local economies, and improve environmental conditions.

One of the best examples of reshaping a community involves the incorporation of hazard mitigation into the reconstruction process. Hazard scholars have emphasized the need to add mitigation into pre- and post-disaster recovery decision making, thereby facilitating disaster resilience, which implies an ability to "bounce back" more quickly following a disaster than those who fail to adopt this approach (Beatley, 1995; Burby, 2001; Olshansky & Kartez, 1998).

Scholars and practitioners from other disciplines are often unaware of hazard resilience or the role it plays in the broader sphere of sustainability. For these concepts to be put into practice on a larger scale, hazards researchers and those who have successfully implemented sustainable recovery principles or incorporated mitigation into other community initiatives need to promote this connectivity. The ability to enlarge coalitions of sustainable development proponents to include those supporting the concepts of hazard resilience and sustainable disaster recovery enhances the likelihood of communities adopting and institutionalizing these principles.

In the United States, a number of tools have been developed to assess and reduce the impacts of hazards. Examples include sophisticated meteorological models, loss estimation software, warning systems, grants management programs, education and outreach efforts, land-use planning, and various construction techniques. While the opportunity exists to take advantage of these tools, communities have largely failed to recognize how current development patterns affect the long-term sustainability of our communities. As Timothy Beatley notes: "Natural disasters dramatically illustrate the ways in which contemporary development is not sustainable in the long run" (1998, p. 237). Mileti notes that disasters frequently occur in areas where unsustainable development is prevalent and disasters limit the ability of communities to move toward sustainability (1999, p. 13). While this perspective is an unfortunate reality in many cases, it does not fully recognize the ability of communities to plan for sustainable recovery.

PLANNING FOR SUSTAINABLE RECOVERY

Following disasters, the pressure to quickly resume services, repair damages, and rebuild is intense. In many communities, powerful pro-growth coalitions comprised of landowners, development interests and governmental units strive to maintain land use practices that serve to profit a small interrelated "growth machine," regardless of their impacts on less powerful interests (Logan & Molotch, 1987). Conversely, research and practice suggests that planning and the use of public sector dispute resolution techniques can play a role in addressing imbalances of power and long-standing community needs and concerns (Forester, 1987, 1989; Godschalk, 1992; Susskind & Cruikshank, 1987). In the context of sustainable disaster recovery, returning to the way things were before the disaster is not always the best approach. Disaster recovery presents a significant, albeit limited, window of opportunity to rebuild damaged structures stronger than before the event, alter land-use patterns, and reshape the existing social, political, and economic landscapes.

A large body of research has shown that disasters tend to differentially impact individuals and groups because of pre-disaster levels of social vulnerability (Blaikie et al., 1994; Bolin & Bolton, 1986; Bolin & Stanford, 1999; Peacock, Morrow, & Gladwin, 1997). To bridge the gap between maintaining the status quo and taking advantage of post-disaster opportunities to enact beneficial change, including actions taken on behalf of less powerful groups, it is incumbent on planners and others to involve all relevant stakeholders and seek consensual approaches that elicit mutual gains across potentially conflicting groups. Past research has shown that disaster policy is less salient to local officials, who tend to experience disasters less frequently than state and federal personnel (Wright & Rossi, 1981), whereas Geipel found that resistance to change can be overcome through the rapid development of inclusive recovery strategies (1982). Oliver-Smith (1990), in his study of earthquake recovery in Peru, found that sustainable recovery objectives such as addressing issues of social inequality and the adoption of hazard mitigation practices during recovery were evident when planning strategies met local needs, local capabilities were considered by those responsible for the distribution of external aid, and the community understood programmatic assistance requirements. More recently, research suggests that individuals and organizations may be more willing to consider changes in the status quo following disasters (Birkland, 1997), including planning for disaster recovery and the adoption of sustainable recovery and reconstruction practices as a result of local, state, and federal leaders who advocate this approach (Smith, 2004; Smith, forthcoming).

The importance of recovery planning has been documented in several communities in the United States (Berke & Beatley, 1992; Geipel, 1982; Schwab et al., 1998; Spangle, 1987; Spangle and Associates, 1991), and abroad (Berke & Beatley, 1997; Bolin & Bolton, 1983; Oliver-Smith, 1990). Yet it is not widely used as a post-disaster decision-making tool. Further, the extent to which planning is utilized, including the methods used to shape recovery decision-making processes, remains largely unknown. In reality, recovery planning-related research has focused on a limited number of communities rather than a nationwide or global analysis. Nor has a comparative study been conducted to assess the merits of comprehensive pre-disaster planning versus the post-disaster adaptive planning approach that is practiced today by the majority of local governments in the United States. Lessons learned through a comparative cross-cultural analysis of recovery planning practice in the United States and other countries should be undertaken to assess key factors affecting a sustainable recovery.

The effectiveness of pre-disaster emergency response planning on post-disaster response has been conducted by Quarantelli (1993b), who notes that sound planning does not always equate with the effective managing of disaster response activities. Similarly, Clarke (1999) found that some communities seemed to respond effectively to a disaster when they failed to

plan or disregarded existing planning documents altogether. More recent work suggests that sustainable recovery can be achieved using an adaptive planning approach (Smith 2004; Smith, forthcoming).

CHARACTERISTICS OF SUCCESSFUL LOCAL RECOVERY PLANS

Mileti (1999) has identified several underlying characteristics of successful local recovery plans. They include:

Community involvement. Stakeholders who will be affected by post-disaster decision making should provide input and policymakers should obtain buy-in from them before a disaster occurs. This will reduce conflict and aid in the development of a plan that reflects local needs.

Information. The effectiveness of a plan is driven by the information used to establish policy and spur action. Specific information needed to develop a recovery plan includes hazard characteristics (e.g., ground motion, high wind, and storm surge) and areas likely to be impacted; population size, composition, and distribution; local economic factors; resources available post-disaster; powers, programs, and responsibilities of local, state, and federal governments as well as nonprofits, businesses, and other relevant stakeholder organizations; current and projected land-use patterns; the type and location of existing and projected building stock and infrastructure, including its interconnectivity to existing and projected development. A Geographic Information System (GIS) provides a meaningful analytical tool to graphically display, overlay, and analyze data and is being increasingly used by local governments and emergency managers to plan for hazards and disasters.

Organization. A recovery plan should identify relevant groups and organizations that can provide specific or assigned types of assistance. A recovery and reconstruction committee can spearhead post-disaster efforts and regularly convene to engage in pre-event planning and policy making. This type of organizational structure should include not only governmental agencies but also seek out nonprofits and emergent organizations that are often the most effective when trying to aid the disenfranchised or those who seem to "fall through the cracks" following disasters.

Procedures. Recovery plans should be action oriented. In the post-disaster environment, existing policymaking procedures must be modified to account for the need to make rapid decisions. For example, recovery plans should incorporate hazard mitigation into the repair of damaged facilities and the chosen location of future development relative to identified hazard areas. In the short run, post-disaster reconstruction permitting and code review procedures may be streamlined or a temporary building moratorium placed on reconstruction until the community can assess its recovery objectives.

Damage evaluation. The recovery plan should clearly articulate operational tasks associated with the mobilization, deployment, and coordination of those assigned to conduct damage assessments. The information should be gathered in such a way that it can be rapidly assimilated and used to assess local needs and assist in the implementation of pre- and post-disaster reconstruction strategies.

Finances. Post-disaster recovery and reconstruction costs money. In many cases, major disasters can result in costs greatly exceeding local municipal budgets. Federally declared disasters can trigger the provision of substantial funding. The ability to link identified needs (gathered as part of the damage assessment) to existing funding sources, technical assistance and appropriate policies is crucial to successfully implementing identified objectives. Local

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needs may not always match program eligibility criteria, and alternative implementation strategies should be identified. In the case of localized disasters that do not meet federal disaster declaration criteria, state and local governments may need to develop contingency budgets.

STATE AND FEDERAL RECOVERY PLANNING

The evaluation of state and federal recovery planning remains virtually nonexistent and represents a fertile area of needed research (Waugh & Sylves, 1996). Nor has the role of federal and state agencies in local recovery practice been adequately described. Anecdotal evidence suggests that states are more likely to develop recovery plans than local governments. Yet their quality, including the degree to which they provide the tools necessary to coordinate state recovery efforts, assist local governments to develop sound plans, or embrace the concepts of sustainable recovery remain uncertain. A nationwide analysis of local and state recovery plans is needed to more accurately assess their effectiveness. The practice of content analysis has been performed on both local (Berke & Beatley, 1992; Godschalk, Brower, & Beatley, 1989) and state hazard mitigation plans (Godschalk et al., 1999). The findings of Godschalk et al. make a compelling argument for strengthening many of the weaknesses identified in this chapter regarding recovery planning. Specific issues and concerns include ineffective implementation strategies, poor plan quality, unclear federal policy directives, organizational fragmentation, the need to foster intragovernmental actions (e.g., training and plan evaluation) that lead to a higher level of capacity and commitment among state and local governments, the value of developing a mitigation ethic, and the use of sustainability as a framework for guiding mitigation planning decisions.

States are typically ill prepared to provide meaningful advice and training in recovery planning. Emergency management planners at the state level have tended to emphasize local response and preparedness workshops and exercises, while recovery efforts have focused on the administration of federal aid programs following disasters rather than helping local governments devise a pre-disaster strategy emphasizing proactive planning and self-reliance. More recently, state emergency management agencies across the country are providing guidance on the creation and implementation of hazard mitigation plans, in large part because of the passage of the Disaster Mitigation Act.

The failure to develop sound pre-disaster recovery plans is particularly troublesome, considering that the majority of hazard events do not trigger federal disaster declarations, leaving state and local governments to address recovery concerns without a clear plan of action. There is, however, some evidence of state participation in the recovery planning process. Florida, for example, has linked hurricane recovery planning to coastal management guidelines, yet their effectiveness as a recovery tool has been questioned by Deyle and Smith (1996) because of a low level of commitment among local governments.

The majority of federal recovery "planning" remains focused on the management of disjointed federal programs and an ad hoc provision of technical planning assistance driven by political pressure or provided in isolated areas that have received significant damages (Smith, forthcoming). Improving the existing federal delivery system will require a major emphasis on state and local capacity-building that is not currently in practice today. There is some evidence that this is changing (Schwab, 2005). FEMA has begun to provide more post-disaster recovery planning assistance, as evidenced by the actions taken following the Florida hurricanes. It remains unclear whether this was a response to political pressure or indicative of a major policy shift within FEMA. One indicator suggesting that the agency is adopting a more active stance

includes the development of a new emergency support function titled "long-term recovery," which is now part of the National Response Plan (NRP). The NRP provides broad functional guidance for federal agencies assigned emergency management roles and responsibilities in the post-disaster environment (FEMA, 2004a). It remains unclear whether this will result in a more formal institutionalization of federal recovery planning assistance. It does not, for example, address the need to proactively develop pre-disaster plans for recovery, nor does the NRP outline the means to adequately train federal, state and local officials. Following hurricane Katrina, for example, large numbers of contractors were hired by FEMA to assist Louisiana and Mississippi communities develop local recovery plans, yet the majority of those involved were largely inexperienced in disaster recovery.

The current disaster recovery policy framework can be substantially improved through planning. The primary emphasis of state and federal efforts should aim to assist local communities more effectively plan for recovery. In 1998, a collection of federal and state government officials and nonprofit representatives met to discuss the creation of action items intended to foster the incorporation of sustainability into the disaster recovery process. The conference resulted in the "wingspread principles," which focused on the education and training of stakeholders, the importance of sustainable redevelopment planning, the creation of incentives (including financing), the elimination of disincentives to sustainable recovery, and building local capacity. Proposed ideas included a proposed 1% allocation of disaster funding to support sustainable recovery assistance, the development of pre- and post-disaster training workshops and materials, outreach efforts in hazard-prone areas, the creation and deployment of sustainable redevelopment "strike teams," the assignment of sustainable redevelopment experts to Disaster Recovery Centers (DRCs), encouraging the development of pre-disaster sustainable redevelopment plans, the provision of financial incentives based on meeting established performance standards tied to prevention, the creation of more flexible funding mechanisms, the adoption of model redevelopment codes, and the facilitation of locally empowered decision making (U.S. Department of Energy, 1998). Three factors limited the success of this effort: the principles were not widely shared with government officials and other relevant stakeholders; an implementation strategy was not established; and the long-standing separation of mitigation and other recovery programs within FEMA was not addressed.

Based on the findings of the conference and past recovery planning research, state and federal plans should include the following principles:

- A concepted effort to obtain buy-in from state and federal emerging management officials, including those who may not recognize the merits of recovery planning
- An emphasis on the importance of pre- and post-disaster recovery planning, including long-term recovery and reconstruction;
- The clear identification of stakeholders and their roles in a sustainable recovery;
- A strategy to identify and address local needs in both the pre- and post-disaster environment;
- An emphasis on the concept of disasters as opportunity (to incorporate sustainable development strategies into post-disaster recovery and reconstruction); and
- The establishment of an education and training agenda focused on building and sustaining local capability, self reliance and commitment, leading to the creation of a sustainable recovery ethic.

A sustainable recovery ethic implies a moral code of conduct that is incorporated into the day-to-day actions of those who embrace the set of guiding principles outlined in this chapter. A sustainable recovery ethic is comprised of three primary components—self reliance, hazard

resilience, and, multi-objective planning. Access to disaster recovery assistance has increasingly become recognized as an entitlement (Platt, 1999). Sustainable communities strive toward self-reliance. That is, communities take action to reduce dependence on state and federal assistance following a disaster. This is accomplished, in large part, by embracing hazard mitigation and disaster resilience. Taking action to reduce identified vulnerabilities before a disaster speeds recovery and limits social and economic disruption. Taking advantage of pre- and post-disaster opportunities to achieve multiple objectives is also vitally important. Achieving this aim requires reaching out to a wide range of individuals, most of whom are not emergency management officials. To facilitate the creation of a sustainable recovery ethic, communities must be held accountable for their actions, particularly those that continue to develop in known hazard areas and seek federal assistance following disasters. Accountability implies that individuals and local governments must bear a greater proportion of disaster recovery costs and invest in locally driven sustainable recovery options.

Local governments have the greatest stake in recovery and must bear the responsibility of long-term reconstruction efforts, yet they are typically the least knowledgeable about recovery programs when compared to FEMA and state emergency management agencies. On the surface, local governments may seem unaware of the potential to achieve sustainable recovery. During a disaster, local officials are often overwhelmed by the tasks associated with response activities, the provision of temporary and long-term housing, grant administration, and the tracking of financial reimbursements. The idea of creating a post-disaster recovery plan can be viewed as a time-consuming exercise by people who are already taxed to their physical and emotional limits. In reality, many local government officials are more aware of the tools that *could* be used to facilitate a sustainable recovery than federal and state emergency managers.

Sustainable development practices are becoming increasingly utilized by local governments. Land-use planners are frequently the primary proponents of these techniques. When viewed in the context of disaster recovery, the concepts of sustainability are often foreign to state and federal emergency management officials. Local land-use planners can play a key role in achieving a sustainable recovery if they are invited to participate in pre- and post-disaster recovery planning activities. Kartez and Faupel (1994) have shown that a great deal of work remains to be done to improve the level of coordination between these groups. Comprehensive land-use planning, economic development, subdivision regulations, zoning, capital improvements planning, greenways design, and other commonly used approaches represent techniques employed at the local government level that are directly relevant to recovery (Schwab et al., 1998; Topping, 1991). This suggests that training and educational methods should emphasize the reciprocal exchange of information including meaningful policy dialogue and the use of participatory planning techniques among federal, state, and local stakeholders that is not fully utilized in the current recovery framework.

NEXT STEPS AND NEW DIRECTIONS: TOWARD A THEORY OF RECOVERY AND THE CREATION OF A NEW RECOVERY IMPLEMENTATION FRAMEWORK

Improving the likelihood of achieving sustainable recovery at the community level requires a reevaluation and modification of the implementation framework in place today. To achieve this result, two interrelated issues must be addressed. First, a theory of sustainable recovery for communities must be developed. Second, embedded within the understandings derived from

theory and past research, a new policy implementation framework should be introduced. This chapter concludes with a discussion of these two issues.

Toward a Theory of Sustainable Disaster Recovery

A significant portion of this chapter has described the nature of sustainable recovery and examined the existing research literature in light of that concept. What we have not discussed, *because it does not exist*, is a comprehensive theory of sustainable community disaster recovery. The development of such a theory is beyond the scope of this chapter. What will be discussed is the importance of theory development for both hazard researchers and practitioners; the scale of theory construction; the nature of the dependent variable; and a presentation of critical contextual, facilitating, and inhibiting variables that can influence the achievement of sustainable community recovery.

The Importance of Theoretical Development

The development of a theory of sustainable community recovery is of great importance both to researchers and practitioners. As a proposed explanation, theory has the potential to guide substantive, integrated research. Currently, we have accumulated a body of research findings and conceptual variables that is beginning to verge on being rather impressive. However, we lack a guiding theory or searchlight to lead our investigations.

The research community is increasingly aware of this lacuna. At the 1st International Conference on Urban Disaster Reduction in Kobe, Japan, a session was devoted to the issues of developing a theory of disaster recovery. Indicative of the current state of the research literature, a variety of topics were discussed, including comparative financial approaches (Johnson, 2005); the use of existing, consensus-based findings (Olshansky, 2005); metrics for measuring disaster recovery (Comerio, 2005); the application of the theory of complex self-organizing systems to recovery (Alesch, 2005); and the quantitative modeling of the recovery process (Chang, 2005). Although they brought discrete and disparate pieces to the theoretical puzzle, the participants unanimously agreed that it is time to integrate what is known into a comprehensive, theoretical explanation of disaster recovery that can be examined through future research.

However, the importance of developing theory is not limited to researchers. Practitioners also benefit from having a verified, theoretical model of disaster recovery. The actions of local, state, and national officials and representatives from financial, insurance, and other private sector institutions can be enlightened and guided by theoretically grounded findings. In addition, a comprehensive theory of disaster recovery can provide a solid foundation for the development of a sustainable recovery implementation framework that is discussed later in the chapter.

The Scale of Theoretical Development

One of the difficulties in producing a comprehensive theory of sustainable recovery is that it must integrate current findings and theoretical concepts that bridge the micro (household, business, and neighborhood) to mid-range (community, region) to macro (society) levels. It has yet to be determined if this formidable task is achievable. The current work of Chang (2005) and

Alesch (2005) represents initial attempts at bridging the micro and mid-range levels. However, their efforts are not based on notions of sustainability.

Our task is more modest. The theoretical formulation suggested here focuses on the community level. The focus on the community is based on the traditional notion of communities as social institutions that solve problems inherent in geographically confined localities. It is that arrangement of social units and systems whose activities, be they consensual or conflictive, form the social, economic, political, built, and natural environmental contexts for daily existence. It is also that social arrangement, because of legal mandate and issues of shared governance, that most directly impacts the achievement of sustainable, community disaster recovery.

The Nature of the Theoretical Dependent Variable

In this proposed theory, we are not interested in traditional notions of disaster recovery that focus on reconstruction or restoration. Instead, we are interested in the concept of sustainable disaster recovery at the community level. Previously we defined sustainable disaster recovery as *the differential process of restoring, rebuilding, and reshaping the physical, social, economic, and natural environment through pre-event planning and post-event actions.* This orientation focuses on processes. It sees sustainable disaster recovery as a holistic, nonlinear series of actions taken by community-level social units and systems that result in alterations to the built, social, economic, and natural environments. Both pre-event and post-event actions are part of the process, including the role state and federal organizations, non-profits, emergent groups, corporations, and others play in local recovery.

Operationalizing such a concept presents some severe problems. The focus on process means that measures of activities and involvement of various social units and systems must be developed. In addition, since the definition assumes through "reshaping" that alterations in systems will occur, some measures for assessing these changes, for example, implementation of new structural and nonstructural mitigation measures, economic growth, heightened local capacity, and so forth must be developed. Further, since there is no clear end to the recovery process and the distinction between short-term and long-term recovery is arbitrary, the question of "when" to measure the progress toward sustainable recovery varies. Any movement toward the development of such a theory must address these gnarly measurement issues.

Some Suggested Contextual, Facilitating, and Inhibiting Variables

Based on the existing research literature, the following are suggested as key variables that may be included in the theoretical model (Table 14.2).[1] These variables are not exhaustive, but are offered as examples of the types of endogenous and exogenous conditions that should be included in any proposed theoretical model of sustainable community disaster recovery. Further, for practitioners to take action, the model should identify a clear set of conditions that facilitate or impede the implementation of this approach. The conditions identified here are intended to stimulate dialogue, including the formulation of additional research questions.

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[1] The facilitators and impediments of sustainable recovery identified in Table 14.2 are representative of research conducted as part of the FEMA Higher Education Project college course, Holistic Disaster Recovery: Creating a Sustainable Future (Smith, 2004), and the text Inter-organizational Relationships and Policymaking: Key Factors Shaping Sustainable Disaster Recovery in the United States (Smith, forthcoming).

TABLE 14.2. Suggested Elements for a Theory of Sustainable Community Recovery

Pre-Disaster, Community-Level Contextual Variables

- Local capacity, including population size, social economic status, economic viability
- Previous disaster experience
- Leadership and advocacy
- Nature and extent of horizontal ties among locality based social units and systems
- Nature and extent of vertical ties of locally based social units and systems to external resources, institutions and centers of power
- Level of local governmental viability and effectiveness
- Level of local public participation in collective action
- Condition of critical infrastructure and housing
- Level of local disaster vulnerability (including social vulnerability)

Characteristics of the Disaster Agent

- Intensity of the impact
- Scope of the impact
- Speed of onset of the disaster
- Level and adequacy of warnings
- Duration of impact

Facilitators of Sustainable Disaster Recovery

- Leveraging resources
- Self-reliance and self-determination
- Commitment to disaster resilience
- State and federal capability and commitment to sustainable disaster recovery
- Capacity-building approaches
- Multi-party recovery committees
- Pre- and post-disaster recovery planning
- Use of dispute resolution techniques
- Identification of local needs
- Program flexibility

Impediments to Sustainable Disaster Recovery

- Viewing disaster recovery programs as an entitlement
- Over reliance on disaster programs that result in more vulnerable communities (moral hazard)
- Narrowly defined recovery programs
- Low capability and commitment
- Lack of federal, state and local recovery planning

Dependent Variable

- Sustainable community disaster recovery

The contextual variables refer to conditions inherent in the community prior to the disaster. They reference the general economic, social, political, organizational, and environmental character of the community. In general, with the exception of the level of local community vulnerability, we would expect these dimensions to be positively related to attaining sustainable disaster recovery. Local capacity, which references the general economic, political, and technical strength and viability of the community to resolve issues and handle problems, is an important component. Similarly, communities that have strong local or horizontal relationships

between their constituent social units and systems should be able to achieve sustainable recovery more easily than those communities that lack such cohesion. Likewise, communities with strong vertical ties to state, regional, and national organizations and institutions have access to external resources that can assist in the recovery process (Berke, Kartez, & Wenger, 1993).

The second set of variables refers to the actual characteristics and magnitude of the disaster. Disasters that are more intense, impact a broader geographic area, have limited forewarning, have a rapid speed of onset that allows for little pre-impact protective activity, and impact the community over an extended period of time will likely produce greater damage and disruption of the local community and may work against the achievement of sustainable disaster recovery. In other cases, widespread damage, for example, may result in a greater willingness to take action to address past practices that are not sustainable.

The facilitators and impediments listed in Table 14.2 represent a preliminary set of variables to consider. Others may be uncovered through further case study analysis. The conditions cited are interrelated and may require the use of multivariate analysis and case study research to explain the strength of hypothesized relationships.[2] For example, the ability to leverage resources beyond those associated with FEMA programs to include other federal, state, or local sources, requires a certain degree of self-reliance. This is particularly true when recovering from localized events that may not result in the release of federal assistance. Lessons learned from developing countries, whose communities routinely implement localized recovery strategies with limited or nonexistent governmental assistance, should be studied further and applied in the United States, when possible.

Similarly, pre- and post-disaster recovery planning relies on the meaningful involvement of multiple stakeholder groups and the use of participatory tools, including dispute resolution techniques (e.g., policy dialogue, negotiation, and group facilitation). Relationships among impediments include the expectation that federal funding will be available post-disaster and a low level of capability and commitment to plan for recovery. Is achieving a sustainable recovery a realistic outcome for many communities given disparities in local capabilities, access to external resources and lack of commitment and leadership? Further, to what extent has "sustainability" become a pejorative term, associated with liberal policies and programs, thereby limiting its widespread adoption among governmental units? Can the emphasis on community-level capacity building be achieved as the United States continues to move toward more formalized policy regimes, including those that address hazard mitigation (Aguirre, 2002)?

Stated in the context of the proposed theory, to what extent can one facilitator affect an impediment to sustainable recovery and vice versa? For example, to what extent can pre- and post-disaster recovery planning be used to increase local capability and commitment, effectively bridging the gap between national objectives, self-reliance and the implementation of strategies addressing local needs? Can the formation of a multiparty recovery committee address the complex issues associated with balancing the use of federal assistance with a long-term vision to reduce the over-reliance on those programs that can increase hazard vulnerability in the long run? Can self-reliance overcome narrowly defined federal assistance programs that are not designed to facilitate a sustainable recovery? As additional facilitators and impediments are identified and the relationships between them are described, a growing body of knowledge will emerge in an area that remains one of the least understood in emergency management. As our understanding of recovery improves, it is incumbent on researchers to disseminate these findings to those who stand to benefit the most from the results.

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[2] The quantitative modeling of disaster recovery processes and outcomes remains limited (see Chang & Miles, 2004; Miles & Chang, 2003, 2004).

SUSTAINABLE RECOVERY IMPLEMENTATION FRAMEWORK: CREATING A DISASTER RECOVERY ACT?

Based on an analysis of the existing literature and an anecdotal review of recovery planning practice, it is clear that the policy implementation framework must be changed to facilitate the widespread adoption of sustainable recovery principles. It is suggested that this may be achieved by the development of a training, research, and education agenda, focused on strengthening the nascent core of sustainable recovery advocates. The findings of applied research, including policy lessons learned from the implementation of the Disaster Mitigation Act of 2000 and the current state of recovery planning practice at the federal, state, and local levels, analyzed through the proposed theory of recovery, should provide meaningful insight into the means necessary to create a new policy framework (Table 14.3).

The intent of this chapter was to describe the concept of sustainable disaster recovery, propose a policy framework to achieve this end (based, in part, on the work of past hazards research), identify specific issues and concerns associated with this approach, and outline a theory of recovery that describes key factors that facilitate or hinder the ability of communities to achieve this aim. Key factors are intended to serve as the basis of a future research agenda. One of the most pressing issues among practitioners and policymakers involves the development of an improved intergovernmental framework focused on the means to assist communities achieve a sustainable recovery. Important subelements of this approach include developing a recovery ethic based on building state and local capacity and self-reliance through an educational, training, and research regimen focused on the role of recovery planning.

Training, Research, and Education

Training and applied research represents a critically important part of developing and sustaining an improved recovery framework. For a training, research, and education program to be effective, six factors should be present:

1. Training in recovery planning should occur before and after a disaster.
2. Training approaches must involve those who are likely to be involved in recovery and reconstruction, while reaching out to those who are often excluded from the process.

TABLE 14.3. Sustainable Recovery Implementation Framework

I. Training, Research, and Education	II. Policy Change	III. Creation of a Sustainable Recovery Ethic
Recovery planning: training and education Pre- and post-disaster; federal, state, and local	Advocacy coalition framework	Reducing moral hazard: hazard resilience
Conduct research Analysis of the Disaster Mitigation Act Nationwide assessment of recovery planning	Disaster Recovery Act Other policy and program options	Beyond liberal bias Movement toward self- reliance
Disseminate findings		

3. Training methods should emphasize local empowerment, including the means to identify and address local needs.

4. Research focused on addressing unanswered recovery questions should be conducted before and immediately after disasters.

5. A greater emphasis should be placed on answering questions posed by practitioners.

6. The methods used to disseminate research findings should be improved to reflect the needs of the practitioner, incorporated into appropriate training materials, and used to educate those tasked with recovery.

Pre- and Post-Disaster Training for Recovery Planning

The current system of recovery training emphasizes how to implement FEMA grant programs. Courses tied to recovery planning are extremely limited.[3] To advance recovery planning, FEMA and appropriate state agencies and organizations should develop and conduct training courses across the country. A greater effort should be made to educate those who are drawn into the recovery process, including land-use planners, public works officials, city managers, building inspectors, business owners, and economic development interests as well as nonprofit officials and representatives of community organizations. State and federal emergency management agency personnel should be required to take recovery planning courses, emphasizing their role as a facilitator of local recovery. A stated intent of the program should be to develop a cadre of trainers that can be used on a regular basis to teach courses before and after a disaster.

Dissemination of Research Findings

Improving our ability to more effectively link research findings and the needs of the emergency management professional represents a major challenge (Cochrane, 1991; Fothergill, 2000; Gori, 1991; Quarantelli, 1993; Yin & Moore, 1985;).[4] The current method used to conduct and disseminate information is inadequate. Effectively sharing research findings with practitioners requires developing the institutions capable of receiving unanswered questions posed by practitioners, disseminating research results in a readily accessible and user-friendly format, and

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[3] The Emergency Management Institute offers three hazard-specific disaster recovery planning courses. The courses, which are tailored for individual communities are infrequently conducted. Two FEMA guidebooks, *Planning for a Sustainable Future: The Link Between Hazard Mitigation and Livability* (2000a) and *Rebuilding for a More Sustainable Future: An Operational Framework* (2000b), were created to provide a broad overview of sustainable recovery principles and more specific guidance to "sustainability planners" who were to be deployed in federal Disaster Recovery Centers following disasters. The positions, proposed as part of the Wingspread Principles, were never created. In 1998, *Planning for Post-Disaster Recovery and Reconstruction* (Schwab et al., 1998), a collaborative effort between the American Planning Association and FEMA, was written. The text represents perhaps the best existing document linking disaster recovery research and practice. The materials are not used by FEMA as part of a training curriculum, nor have they been systematically disseminated to practitioners.

[4] The definition of the emergency management professional is evolving. The creation of emergency management associations (i.e., the International Association of Emergency Managers and the National Emergency Management Association) and the development of accreditation standards have led to a nascent, but growing recognition among local and state officials of the emergency management profession. Smith (2002) argues that following disasters, the definition of an "emergency manager" becomes blurred. This is particularly evident in the case of disaster recovery, when public works officials, planners, financial analysts, and others are drawn into the complexities of recovery planning and policymaking, grants management, and reconstruction.

establishing an effective university reward/incentive system for conducting applied research. Numerous research questions linked to achieving sustainable recovery remain unanswered.[5] It is imperative that the gaps in the literature are studied and the findings shared with those who can put the lessons learned into practice. The measurement of fundamental assumptions in disaster recovery (e.g., mitigation works, pre-disaster planning improves recovery outcomes, and adaptive planning can result in a sustainable recovery) has been done on a surprisingly limited basis. A new research agenda requires the systematic analysis of these and other questions, focused on the development of applied research findings that are useful to the practitioner and policymaker, while advancing our knowledge of recovery.

Developing interagency agreements between practitioner-based organizations like the National Emergency Management Association, the International Association of Emergency Managers, and the National Association of Floodplain Managers and research centers such as the Natural Hazards Research and Applications Information Center, Disaster Research Center, or the Hazard Reduction and Recovery Center could provide a vehicle to collect unanswered research questions. Once distributed to individuals or teams, the researcher(s) would agree to develop reports highlighting results, emphasizing a succinct writeup of specific actions or policy recommendations. Research centers could publish quarterly newsletters comprised of research findings and distribute them to practitioner-based organizations. Another option involves the creation of a "hazards extension service" operated through existing land grant universities. Agricultural extension agents have a long history of transferring the latest knowledge and techniques to farmers and ranchers, for example. Information sharing has resulted in a major shift in behavior over time (i.e., the regular use of crop rotation to sustain soil fertility, the implementation of techniques limiting soil erosion, and the use of seed types suitable to local conditions). Perhaps this organizational framework can be used to share the latest research findings with state and local government officials, nonprofit agencies, or other stakeholders (including individual citizens) involved in disaster recovery and emergency management.

Policy Change: The Advocacy Coalition Framework

A number of policymaking models exist that provide insight into the current disaster recovery implementation framework including choice theory (Jones, 1994; Simon, 1977) agenda setting (Baumgartner & Jones, 1993; Braybrooke & Lindblom, 1970; Kingdon, 1984; Lindblom, 1959), economic game theory (Chong, 1991; Stoker, 1991), and policy and social learning (Friedman, 1981; Rose, 1993; Sabatier & Jenkins-Smith, 1993). Baumgartner and Jones (1993) as well as Chong (1991) provide substantial evidence that incremental change can be followed by brief periods in which major policy transformations can occur. These findings have been supported when analyzing emergency management policy change as Claire Rubin's (2001) Disaster Timeline suggests.

The Advocacy Coalition Framework describes the means by which policy change can be purposefully achieved through the identification of champions or "policy entrepreneurs" who sustain advances via policy learning (Birkland, 1997; Olson, Olson, & Gawronski, 1999). Sabatier and Jenkins-Smith (1993) argue that policy change is explained by "advocacy coalitions" that drive policy adoption and learning. Evaluated in the context of disaster recovery

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[5] The book *Disasters by Design* notes several pressing disaster recovery research questions, most of which have not been addressed and remain worthy of study (pp. 310–311).

policy implementation, this requires building a diverse and powerful coalition of stakeholders, many of whom do not understand the benefits of a pursuing a sustainable recovery. Most local government officials do not recognize the opportunities lost during recovery and reconstruction, while state officials routinely face ongoing constraints associated with maintaining a cadre of recovery experts and federal agency officials manage narrowly defined programs whose rules serve to limit coordination across administrative units and hinder sustainability.

Those who currently support the concepts of a sustainable recovery include hazard scholars; multinational organizations; and a narrow band of federal, state, and local government officials who have employed these techniques on a limited basis. The views of hazards researchers are evident throughout this chapter. Multinational organizations such as the World Bank, Organization of American States, and United Nations have begun to address the connectivity between hazard mitigation and sustainable development in earnest, yet hazards are still not widely recognized in the larger sustainable development policymaking arena (Berke & Beatley, 1997). This being said, steps have been taken to draw attention to the problem, including the United Nations declaration of the 1990s as the International Decade for Natural Disaster Reduction.

During this time period, FEMA attempted to push forward the creation of grass-roots support for hazard mitigation and an improved level of preparedness at the local level through the creation of Project Impact, the limited development of sustainable recovery education materials, and the selective provision of post-disaster recovery planning assistance. These federal activities resulted in the establishment of strong advocates (particularly among local governments) as well as some who viewed the programs as overtly political, thereby limiting the breadth of support. The creation of Project Impact and the wingspread principles did not include a wide political spectrum in their formulation, nor were all members of the emergency management community, including stakeholder groups traditionally tasked with mitigation and recovery at the state and local levels, involved in the early phases of the process. In the case of Project Impact, this resulted in a degree of hostility among FEMA staff from other program areas who viewed the initiative as a drain on limited resources. Several state emergency management agencies expressed concerns that they were not involved in the program's formulation. Following a change of federal leadership, the Project Impact program was discontinued. A coalition of support remains, primarily among local governments who received seed money from FEMA. At the community level, research suggests that the program helped to foster an enhanced level of pre-disaster preparedness through the assessment of hazard vulnerabilities and the adoption of mitigation practices (Wachtendorf & Tierney, 2001). The wingspread principles never moved beyond the conceptualization stage.

In a limited number of cases, sustainable recovery and reconstruction principles have been put into practice at the community level. This has occurred predominantly in high hazard states such as California, North Carolina, and Florida, where regulations encourage or require it. This is, however, the exception rather than the rule. In the post-disaster environment, FEMA has selectively provided recovery planning assistance to communities based on political factors (i.e., media attention) and the extent of damages rather than institutionalizing the means necessary to provide widespread training and technical assistance in both the pre- and post-disaster environment. As mentioned previously, there is some evidence to suggest that this may be changing. States, such as North Carolina, have attempted sustainable recovery initiatives with moderate success, driven in large part by the infusion of federal and state assistance following major disasters. The degree to which this has had the unintended effect of limiting the long-term commitment needed to build local capability and self-reliance remains worthy of future study (Smith, forthcoming).

Initiating a coordinated change in current practice requires the reformulation of the existing recovery policy framework. To be effective, the lessons learned from past federal, state, and local initiatives should be considered. Following a groundswell of support for improving the nation's mitigation efforts, Congress passed the Disaster Mitigation Act of 2000, which codified mitigation planning through a collection of incentives and penalties for compliance and noncompliance, respectively. The Disaster Mitigation Act was created in large part because of identified shortcomings in the implementation of state and local hazard mitigation strategies. More specifically, members of Congress and the Office of Management and Budget questioned why millions of post-disaster Hazard Mitigation Grant Program funds remained unspent, often years after an event (Godschalk et al., 1999). The Disaster Mitigation Act of 2000 mandated the development of state and local hazard mitigation plans as a precondition for receiving federal pre- and post-disaster mitigation funding. This has resulted in the creation of thousands of hazard mitigation plans across the country. While the Act is still in its infancy, and the overall quality of the plans have yet to be evaluated (beyond the requirements established by FEMA), the Act represents an important step forward in the attempt to tie specific rewards (i.e. federal funding) to pre-disaster planning. The assessment of Disaster Mitigation Act-compliant state and local plans represents an important area of continued research, building on the work of Burby (1998), Burby and Dalton (1994), and Godschalk et al. (1999). The plans provide a rich, nationwide dataset that is directly comparable across communities and regions because of standardized planning elements and uniform requirements.

Should we consider the creation of a Disaster Recovery Act to aid states and local governments plan for a sustainable recovery? Emergency management planning mandates have been widely criticized, particularly those that emphasize a top-down approach (Berke & Beatley, 1997; Tierney, Lindell, & Perry, 2001). It has also been shown that federal emergency management policy initiatives must more fully recognize the interrelationships across our system of shared federal, state, and local governance in order to be effective (May, 1994; May & Williams, 1986). These findings do not mean that mandates cannot provide an important means to achieve local, state, and national policy objectives. For example, research demonstrates a nexus between local comprehensive planning mandates, reduced disaster losses, and the establishment of vehicles for local input in decision-making processes that affect a community's level of disaster resilience (Burby, 2005; Burby & Dalton, 1994). Similarly, Berke, Beatley, and Wilhite (1989) have identified specific factors that influence the local adoption of hazard mitigation planning techniques.

There is widespread evidence demonstrating that federal, state, and local governments are unprepared to address long-term disaster recovery. The challenge then becomes developing a *process* that balances the legitimate concerns of local empowerment and self-determination with the need to provide local communities with the tools they need to more effectively and comprehensively recover from disasters. A primary purpose of a recovery act, or other policy options for that matter, should include the reworking of the existing federal–state–local partnership and the redesign of the current set of uncoordinated programs and policies. This approach would require significant changes in the way pre- and post-disaster recovery planning occurs; state and local needs are identified; recovery assistance is provided; and federal, state, and local capability is maintained over time.

Any attempt to change the existing policy framework should involve an analysis of the Disaster Mitigation Act in order to apply relevant policy lessons. Since the Disaster Mitigation Act has been in existence since 2000, numerous questions posed throughout this chapter can be studied and used to craft a more robust recovery framework reflecting current conditions and realistic policy objectives and outcomes. Specific areas of research should include an analysis

of the type and quality of federal and state assistance (i.e., education and training programs), the breadth of stakeholder involvement (i.e., land-use planners, environmental and social justice groups) in local mitigation planning, the degree to which the Act's policy objectives have been met (i.e., speeding the implementation of mitigation projects and an aggregate reduction in hazard losses), the degree to which the Act has resulted in the formulation of a state and local mitigation ethic, and the degree to which a diverse and powerful advocacy coalition capable of sustaining mitigation as a key practice within state and municipal government was achieved.

Few states and local governments have developed disaster recovery plans, owing in part to the fact that states and local governments have not been shown the tangible benefits of doing so, nor have specific incentives or penalties been established. To be effective in the long run, the reward system must be balanced with the need to build local capacity, thereby avoiding the rich get richer syndrome—namely the tendency of those communities (and individuals living within those jurisdictional boundaries) with a high degree of technical, administrative, and fiscal capability to gain access to federal assistance, while those with lesser capabilities fail to do so. This would have the unwanted effect of reducing assistance to low-income communities, which are often the most vulnerable to the effects of disasters (Cutter, 1996, 2001; Peacock, Morrow, & Gladwin, 1997).

Creating a Sustainable Recovery Ethic

The creation of a sustainable recovery ethic should represent a long-term aim of the Advocacy Coalition Framework, based on an extensive training, research, and education agenda leading to a shift in the current policy implementation framework. In a review of the book *Disasters by Design*, Aguirre (2002) argues that hazard scholars and planners are not capable, nor willing to advance this agenda as it relates to hazard mitigation. Further, forcibly changing social norms associated with how societies address natural hazards could result in a form of social engineering, potentially discrediting the profession. In reality, it is too early to tell the breadth and depth of influence that hazard scholarship, including *Disasters by Design*, has had in shaping the behavior of local governments, businesses, and individuals. A clear connection can be made already, however, on its impact on the thinking of FEMA and the ultimate creation of the Disaster Mitigation Act. While political pressure to expedite the expenditure of federal mitigation funding was a key factor associated with the formulation of the Act, the role of hazards scholars and practitioners should not be discounted. The scientific analysis of social problems often represents the genesis of policy change. It should also be noted that the influence of any advocacy coalition can increase or decrease over time, and an argument can certainly be made that the role of mitigation, and sustainable recovery for that matter, is becoming lost in the highly politicized homeland security milieu. This does, not, however, discount the importance of changing the manner in which we address disaster recovery.

Like in the case of mitigation, convincing policymakers and government leaders to adopt a sustainable recovery ethic will necessitate clearly demonstrating the benefits in a way that appeals to a broad range of interests. Historically, the concept of sustainability has been associated with a more liberal political philosophy, owing in large part to its roots in the environmental community. In reality, increasing self-reliance and reducing the outlay of federal assistance appeals to a broader network, including those espousing a more fiscally conservative viewpoint. The implementation of hazard mitigation measures represents a widely recognized component of a sustainable recovery and one that can produce quantifiable outcomes (i.e., future monetary losses avoided). Other, sometimes more intangible benefits, including an improved quality of

life, social equity issues, a sound economy, the protection of environmental resources, and improved public health, have not been quantitatively assessed in the context of sustainable recovery. Qualitative "success stories," which are often written post-disaster and represent an important tool to share information with other practitioners, are not nearly as influential among federal policymakers as those reports that clearly document specific monetary benefits. The initial inability of FEMA to effectively demonstrate the quantitative benefits of hazard mitigation to skeptical members of Congress nearly led to the elimination of the Hazard Mitigation Grant Program. Were it not for the strong support of members of Congress whose districts benefited from the funds following past disasters, the program may have been discontinued.

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The intent of this chapter was to suggest that the principles of sustainability represent a valid means to improve the way we currently approach disaster recovery. A growing number of researchers and a select group of practitioners are increasingly demonstrating the merits of this model (Beatley, 1998; Burby, 1998; Mileti, 1999). Yet fundamental recovery questions remain unanswered. Given our limited understanding of key recovery concepts, it should not be surprising that the current approach used by the majority of practitioners does not facilitate sustainability—rather it systematically hinders it. Advancing the cause of sustainable recovery will require expanding the network of support to include local government planners, for example, who frequently implement sustainable development initiatives.

A review of past research found that while a number of dimensions of sustainable recovery had been investigated, they had not been integrated into a meaningful theoretical framework. Operationalizing a sustainable recovery agenda will require the development of a broad coalition of advocates who can articulate the benefits of altering the status quo. Hazard scholars can play a key role in this effort, similar to that achieved in advancing a hazard mitigation agenda that ultimately led to the passage of the Disaster Mitigation Act of 2000. A modified research agenda is needed—one that more closely links research and practice. A central aim should be to address the gaps in the existing research literature (as identified in this chapter), assess the policy lessons associated with the implementation of the Disaster Mitigation Act of 2000, and share these findings with practitioners. As studies are conducted and the findings disseminated to practitioners, a growing awareness of how the current recovery framework can be improved should emerge. A suggested agenda is tied to five actions:

1. *Conduct a nation-wide assessment of recovery planning.* The study should evaluate the factors listed in Table 14.2 as well as broader questions such as the extent and quality of recovery planning as practiced by local and state governments; an assessment of direct (quantifiable) benefits and missed opportunities across local, state, and federal planning efforts; and the degree to which pre- and post-disaster planning leads to sustainable outcomes. To a large extent, disaster recovery research has focused on natural hazards. More work needs to be done to assess how communities plan to recover from other hazards including technological accidents, terrorism, and medical disasters. To assist practitioners, specific recommendations for action should be provided, based on the results of the assessment.

2. *Assess the policy lessons learned from the implementation of the Disaster Mitigation Act of 2000.* The proposed recommendations for action must reflect the political realities of

the current emergency management policy implementation framework. An analysis of the Disaster Mitigation Act merits attention for several reasons. One, the Disaster Mitigation Act includes requirements (i.e., linking state and local planning to rewards and penalties) that may be applicable to disaster recovery planning. Two, the timing of the assessment should allow researchers to determine the degree to which planning requirements led to identifiable outcomes (i.e., an expedited expenditure of post-disaster mitigation funding and a reduction in hazard vulnerability). Three, understanding the historical and political underpinnings of the Act can provide lessons for those seeking to improve the current disaster recovery implementation framework.

3. *Use the information obtained through research to build an advocacy coalition supporting the passage of the Disaster Recovery Act.* The Advocacy Coalition Framework literature suggests that meaningful policy change can occur over time (generally a decade or more) given the development of advocates (including researchers and policy analysts) who maintain a set of core beliefs and seek to modify the political system to meet their aims (Sabatier & Jenkins-Smith, 1993). Viewed in the context of developing a new sustainable recovery implementation framework, policy advocates must be prepared to act following the results of the proposed research agenda (Quarantelli, 1993b). Attempts to push for meaningful policy change may also be considered following major disasters given their heightened political salience. A review of the emergency management literature clearly demonstrates that significant policy change has occurred in the United States following a number of major disasters (Barry, 1997; Rubin & Renda–Tanali, 2001). Hurricane Katrina, perhaps the worst disaster to strike the United States, is representative of the type of event that can trigger significant policy change. The extent to which the hurricane affects changes in federal, state, and local response and recovery policy and practice merits extensive study.

Any attempt to foster change must take into account prevailing political and organizational conditions. For example, the creation of the Department of Homeland Security, the organizational changes within FEMA, and the national emphasis on combating terrorism all play a part in how a coalition should be created and the means used to push a given policy agenda. Can FEMA function effectively within a department whose primary aim is to combat terrorism? What impact will organizational changes within FEMA have on the delivery of key functions such as hazard mitigation? Has the emphasis on terrorism resulted in a shift away from an all-hazards approach to emergency management? For researchers to play a greater role in the current policy dialogue, a greater understanding of how these changes impact the delivery of pre- and post-disaster recovery assistance (across both natural and human-caused hazards) is required.

4. *Evaluate the merit of other policy options.* The passage of a Disaster Recovery Act represents one of several potential methods to improve the current system that is best characterized as a disjointed array of recovery programs without a clear set of guiding principles. Regardless of the policy option(s) chosen, a central theme should include attempts to foster a greater measure of local self-reliance, moving away from the existing model which has created an over-dependence on federal aid. Other approaches emphasizing bottom-up techniques should be considered as the international disaster recovery and sustainable development literature suggests (Berke & Beatley, 1997; Harrel-Bond, 1986; Oliver-Smith, 1990; Uphoff, 1986). Options may include the creation of local sustainable recovery incubators in selected communities; the establishment and implementation of sustainable recovery training programs; the modification of current funding streams to complement sustainable recovery efforts and the placement of experts in Disaster Field

Offices as suggested in the wingspread principles; the integration of recovery practices into existing federal, state, and local programs that currently embrace sustainable development initiatives (e.g., coastal management, community development, environmental planning, etc.); or the creation of collaborative planning networks (Mileti, 1999; Nakagawa & Shaw, 2004) comprised of professionals (e.g., planners, engineers, etc.), nonprofits, community and environmental groups, and businesses that have successfully implemented sustainable recovery programs and are willing to share their experiences with others. The approaches mentioned here should be further studied and the results applied in the field in order to assess their effectiveness.

5. *Create a nationwide sustainable recovery ethic.* Sabatier and Jenkins-Smith note that the ability to successfully implement major policy change through the use of the Advocacy Coalition Framework can take upwards of a decade. It is suggested here that the eventual widespread adoption of a sustainable recovery ethic will require a robust training, research and education agenda and the development of a cadre of advocates capable of maintaining this effort over time. One possible objective of this coalition may include the passage of the Disaster Recovery Act. An important aim of any approach should include facilitating the incorporation of sustainable recovery principles into state and local policy; planning; and the day-to day activities of local governments, organizations, businesses, and citizens. It will be incumbent on the Advocacy Coalition to continually improve the recovery process through training and education programs based on policy lessons learned through practice and applied research.