
Hazard mitigation and sustainable community development

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Abstract

Emergency management has come to be regarded by many analysts as a critical part of the development of sustainable communities. The emergency management function has been linked to issues such as environmental stewardship and community planning. Especially important is the linkage between hazard mitigation efforts and community planning in the context of building sustainable communities. But this conceptual linkage has been difficult to implement in practice. The resolution of this difficulty and a clarification of the essential linkage of hazard mitigation to community planning will require a broader definition and a reformulation of the emergency management function. It will also require an assessment and the removal of impediments that currently stand in the way of the implementation of this linkage. Practical steps can be taken to begin this important chore.

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Introduction

Emergency management is being relocated within a wider framework, or so it seems. Recent efforts have suggested that it is, for example, an integral part of community decision making. It is in this context that emergency management functions are increasingly connected to issues such as environmental stewardship, community planning, and sustainable development (Britton, 1999). But the effectiveness of emergency management in this broader framework remains sporadic at best (Mileti, 1999).

Hazard mitigation has been identified as the most critical activity in each sphere of emergency management, especially with respect to recurrent natural hazards that are generally predictable. Yet the dedication of policy makers to mitigate hazard impacts before disasters strike and their ability to plan and implement mitigation programs remain in question (Godschalk *et al.*, 1999).

The fostering of local sustainability in the face of an extreme hazard event, natural or man-made, is also said to involve emergency management in the process of community planning and development (Beatley, 1995; Mileti, 1999). In the light of historic and rising costs associated with natural disasters in the USA over the decade of the 1990s, for example, it has been suggested that a pre-eminent objective of emergency management must be to mitigate hazards in a sustainable way and to stop the trend toward increasing catastrophic losses from natural disasters. But the relevance of emergency management to the task of building sustainable communities is not universally articulated or understood.

Hazard mitigation and the sustainability of local communities in the face of anticipated natural and man-made disasters are broad themes popular in the emergency management literature. They are also difficult themes for practicing emergency managers to apply to or implement in their practical work. The purpose of this paper is to explore the nature of this difficulty and to suggest initial steps for its resolution. This analysis will articulate the linkage of hazard mitigation, sustainability, community planning, and emergency management in a new and more inclusive framework. It will include an assessment of the impediments that currently stand in the way of this linkage and



recommendations for their elimination. In conclusion, nothing short of a reformulation of the emergency management function will be required for the successful completion of this task. Some initial steps will be suggested for that reformulation.

The logic of linkage

Hazard mitigation, sustainability, community planning and emergency management are conceptually linked. The challenge is to build a practical linkage among these concepts that directs the pragmatic work of emergency management toward the goal of sustainable community development. This is, to a degree, a challenge to place the emergency management function at the center of community development and community planning. To understand this challenge and its importance, let us examine the concepts in question more closely.

Hazard mitigation is a concept much in use and generally understood, although it is not as easily implemented. The concept of hazard mitigation begins with the realization that many disasters are not unexpected. They stem from:

The predictable result of interactions among three major systems: the physical environment, which includes hazardous events; the social and demographic characteristics of the communities that experience them; and the buildings, roads, bridges and other components of the constructed environment (Mileti, 1999, p. 3).

Based on this realization, hazard mitigation takes the form of advance action designed to eliminate or reduce the long-term risk to human life and property from natural and man-made hazards.

The rationale for hazard mitigation is inescapable. By reducing the magnitude of future disasters and the risks to life and property associated with them:

Effective mitigation can substantially reduce the cost of disaster response and recovery (Godschalk *et al.*, 1999, p. 17).

It is easy to understand the utility of hazard mitigation, especially with respect to recurrent natural hazards such as hurricanes, floods or earthquakes that may be anticipated. Their impacts on human life and property may be reasonably reduced with advanced planning.

With respect to natural hazards, for example, it is common to discuss two types of hazard mitigation. Structural mitigation is perhaps the easiest to understand. Structural mitigation includes the strengthening of buildings and infrastructure exposed to hazards by a variety of means (building codes, engineering design, and construction practices, etc.). Its fundamental purpose is to increase resilience and damage resistance. A second type of hazard mitigation, non-structural mitigation, is also a critical component of coping with natural hazard events. Directing new development away from known hazard locations through land use plans and regulations, relocating to safer areas existing developments that have sustained damage, and maintaining the protective features of the natural environment (i.e. protecting sand-dunes, forests, and vegetated areas that absorb and reduce hazard impacts etc.) are examples of non-structural mitigation that have significant value in risk and cost reduction (Godschalk *et al.*, 1999).

The impeccable logic of hazard mitigation has been incorporated into US disaster law, if not always in practice. The Robert T. Stafford Disaster Relief and Emergency Assistance Act, passed by the US Congress in 1988, was designed to encourage comprehensive disaster preparedness and hazard mitigation measures to reduce losses. It recognized that special measures were necessary to assist state and local governments in rendering aid, assistance, emergency services, and the reconstruction of areas devastated by natural disasters. At the heart of this law was a set of hazard mitigation requirements, designed to be a part of a coordinated mitigation strategy or plan. In other words, the Stafford Act recognized the value of, and sought to encourage the implementation of, local mitigation measures to reduce losses and the risks to life and property.

The ultimate purpose of hazard mitigation efforts is perhaps best realized when they result in a shift from a disaster-driven system to a policy- and threat-driven system of emergency management. This is to suggest that emergency management becomes proactive rather than reactive. A proactive approach requires that the disaster policy framework change from reacting to individual disasters to a focus on living within an ecological system with foreseeable variations. It emphasizes the implementation of practices

that result in the development of resilient communities. This is, in other words, to suggest the linkage of hazard mitigation and sustainability within the emergency management framework.

Sustainability means, at a minimum, that: . . . a locality can tolerate and overcome damage, diminished productivity, and reduced quality of life from an extreme event without significant outside assistance (Mileti, 1999, p. 4).

To achieve sustainability means that communities must choose where and how development proceeds. It implies that each locality must evaluate its environmental resources and hazard risks, choose the future losses that it is willing to bear, and ensure that:

Development and other community actions adhere to these goals (Mileti, 1999, p. 5).

Planning for sustainable communities, in the framework articulated here, is seen as being directly connected to all community planning, including planning for economic development. It links concerns for social, economic and environmental wellbeing in a coordinated process aimed at meeting present needs. It also preserves the ability of future generations to meet their needs. Planning for sustainability (i.e. the development of sustainable communities) is a concept originally associated with environmental policy. But it is increasingly linked to the emergency management function and policy (Beatley, 1995; Geis and Kutzmark, 1995). When hazard mitigation is linked to sustainability, it broadens the emergency management function significantly. It emphasizes reducing the vulnerability of communities to natural disasters and man-made hazards, but in the context of all other community goals such as reducing poverty, providing jobs, promoting a strong economy, and generally improving people's living conditions (FEMA, 2000).

The goal of building sustainable communities is perhaps most easily seen in relation to emergency management primarily through the hazard mitigation function. The relationship is fairly obvious. Community planning, this logic suggests, must insure that economic and community development decision makers (public and private) operate with a full awareness of the risks to people and property posed by natural and man-made hazards. It further requires that community

development include anticipation of and solutions to the risks associated with potential hazards (Godschalk *et al.*, 1999). This ultimately places emergency management at the center of community planning and development. The challenge is to make this conceptual linkage a practical reality.

The logic of linkage suggests that natural and man-made disasters need to be viewed as community-based problems requiring broad community-based solutions. What is needed, in the view of those who argue for the linkage of mitigation, sustainability, community planning and emergency management, are solutions that create disaster-resilient communities in the context of the broader work of community planning and development. This requires a much broader view of the emergency management function and a more integral role for it in community planning. Before turning our attention to this broader view, let us first discuss some of the impediments that have made and continue to make this conceptual linkage difficult to implement.

The impediments to linkage

The traditional emergency management literature has long suggested that emergency managers are motivated by immediate challenges or by responding to single events rather than by being engaged in long-term planning. Wright and Rossi (1981, p. 53) found that, as a general rule:

Hazard issues are not especially salient in most communities.

Often there is indifference or outright opposition to disaster planning (Kreps, 1991). Public officials in local communities, as well as the general public, often:

Harbor the illusion that emergencies and disasters involve only the first responders (Grant, 1996, p. 319).

Additionally, there are four phases of emergency management (mitigation, preparedness, response, and recovery), but only the response phase receives much public attention. The record of local governments has often been a pattern of weak and inconsistent performance across all disaster stages (Wolensky and Wolensky, 1990).

Many local officials and community planners assume that emergency management

is not their responsibility or concern. In the USA, for example, state and local governments are expected to take proactive measures to mitigate the potential impact of emergencies or disasters in their communities. The Stafford Act, noted earlier, and a host of other federal requirements place increasing responsibility for emergency management functions on state and local officials who are not emergency managers. But officials and administrators who do not work directly in the field of emergency management tend to assume that they need not learn much about the field or become involved in any of its work (Grant, 1996). Consequently, local officials and planners often do not see any necessary linkage between emergency management, community planning, and the political decision making of the community. Indeed, it is all too commonly assumed and accepted that the politics and planning of communities is not associated with the emergency management function.

Emergency managers, even when they are committed to hazard mitigation efforts, will find that hazard mitigation is frequently not seen as urgent within their community. Unless a hazard is more or less immanent, sustained governmental and public interest and support for planning and mitigation are difficult to sustain (Perry and Mushkatel, 1984). Policy makers and stakeholders alike tend to underestimate hazard potentials. They see a low probability of hazard occurrence, are reluctant to impose limitations on private property, often unwilling to bear the costs incurred by mitigation plans, and frequently are ambivalent toward hazard mitigation, because they see it as being in conflict with other values and goals (Grant, 1996).

Even where they are required to prepare hazard mitigation plans, as with the Stafford Act in the USA, emergency managers often are unable to implement the desired result. In an empirical analysis of the local implementation of the Stafford Act, Godschalk and his colleagues found that the implementation of mitigation plans is problematic. Section 409 of the Stafford Act, for example, requires the preparation of state and local disaster mitigation plans as a condition for receiving federal disaster assistance. These plans are supposed to be developed prior to a disaster, should be

regularly reviewed and updated, and should mitigate future damage impacts. In practice, mitigation plans are often developed in post-disaster situations to qualify for the federal money. As such they have no application as mitigation plans and, just as important, are driven by reactions to past disasters as opposed to comprehensive planning for the future (Godschalk *et al.*, 1999).

In their study, Godschalk *et al.* found that organizational fragmentation in mitigation efforts, the low salience of mitigation to politicians and stakeholders, sparse program guidance, and vaguely defined goals all paralyzed the efforts at local mitigation. Local politicians, for example, often see their roles as promoting economic development. Minimizing risks from natural or man-made disasters is regarded as a secondary responsibility. Local mitigation efforts are often seen as being at odds with economic development and local officials often show “ambivalence toward or disregard for hazard reduction” (Godschalk *et al.*, 1999, p. 491). The study also found that interest group activity often retards mitigation efforts. In California, for example, schools are subject to state seismic retrofit requirements, while hospitals have managed to remain exempt from this requirement because of a very powerful hospital lobby (Godschalk *et al.*, 1999).

In any mitigation-planning scenario, competing community values can lead to conflict between very contentious interests. Public safety, individual property rights, economic development, environmental preservation, historical preservation, and personal freedom, are just a few of the competing values that come into play. The resolution of conflicts that such competing values may produce is seen as a political function not involving the emergency management function. Emergency managers, and many others, are apt to agree with the commonly expressed sentiment that emergency management is not political and there is no politics of disaster etc.

As a result of its exclusion from the political dialogue about competing values in community planning, emergency management organizations are inclined not to expand their operational or strategic roles. In fact, both their experience and their training often do not equip emergency management professionals to seek broader involvement in

their communities. Nor are other public managers or local officials prepared by training or experience to see the critical relevance of emergency management in the broader tasks of community planning and development. In the absence of a more proactive involvement in community planning, emergency management is bound to remain in a position of low salience, low stakeholder support, scarce resources, and minimal institutional stability.

Disaster-resilient communities, sustainable communities, are the product of the building-blocks and the tools that create resilience in relation to all economic, social, and environmental concerns. Communities must be:

Ready to address the root causes of disasters and do the difficult work of coming to negotiated consensus about which losses are acceptable, which are unacceptable, and what type of action they are willing to take (Mileti, 1999, p. 64).

They must come to see sustainability as a critical part of planning and development and as requiring a linkage between hazard mitigation and policies on every aspect of community development. The question, given the many impediments that constrain the emergency management function, is what practical steps may be taken to promote this result?

Promoting linkage: a new definition of emergency management

As a practical matter, every community must be prepared to address a wide variety of disaster types and to design their disaster management organizations and policies with enough flexibility to accommodate both anticipated and unanticipated events. Waugh (1996), assessing the disaster management challenges for the new millennium, notes the increasing reliance on regional and local preparedness and mitigation. There is a corresponding need to increase the focus on multi-hazard approaches, increase reliance on both structural and non-structural mitigation, and to increase the linkage of government disaster agencies with outside agencies (Waugh, 1996, pp. 351-4). There is also a growing awareness of the need for disaster management systems and policies to be linked with all policies promoting sustainability.

The linkage between hazard mitigation, sustainability and community planning must be more clearly articulated and implemented in the context of community planning and development. Not all of the impediments to this linkage will be easily removed, but at least three steps seem to be necessary for the successful beginning of this task. These steps relate to the professional training of all public managers and planners, the integration of all community development policies in the context of sustainable development, and a broader definition of the emergency management function.

As a first step, the professional training of all public management professionals, including emergency managers, should reflect the linkage between hazard mitigation, sustainability and community planning. It is essential, in this context, that all public administrators, community planners and relevant public management professionals have some emergency management training. This does not mean that all public administrators and planners, for example, need to be fully cross-trained as emergency managers. At a minimum, they of course:

Must know the mandates, responsibilities and functions of emergency management to be accountable for their actions and to maintain public safety and protect property (Grant, 1996, pp. 324-5).

Hence, some emergency management training and education for all public administrators and planners should be required as a component in their professional training and education. But to serve the broader purpose of enhancing the strategic linkage herein envisioned, more is needed. This training should also and ideally stress the value of mitigating hazards in a sustainable way as a critical component of community planning and development generally. Conversely, both the training and professional development of emergency management professionals should emphasize the linkage between hazard mitigation and sustainability. This is to emphasize that the assessment and mitigation against hazard possibilities are connected to the making of a series of choices that will impact the economic, physical and social wellbeing of the community.

A second logical step is the articulation of sustainable community development as requiring the linkage of all public policies necessary to maintain the social, economic

and political stability necessary for a community to flourish. This must entail, as part of the end product, the component of disaster or hazard mitigation. But the end product, it should be emphasized, involves all facets of community life in a coordinated effort. For example, in relation to producing sustainability in the face of serious earthquake risks, a local community might logically be concerned about building codes as a mitigation strategy. But successful mitigation ultimately requires more than building codes alone. It requires the linkage of policies on building codes to those on housing density, on urban transportation, on social equality, on environmental quality, and to those on public safety in a coordinated approach designed to build truly sustainable communities. Policy integration is therefore the key ingredient to the building of sustainable communities. In other words, sustainability becomes the conceptual link in all facets of community planning and development.

The third step necessary is the redefinition of the emergency management function itself. The emergency management function must be a crucial part of policy integration in community planning and development. Its connection to the building of sustainable communities goes beyond the goal of mitigating hazards. This is to say that the emergency management function must become, by definition, an essential component in the broader work of community development.

The emergency management function, in the context of community development, is part of a broader calculus of strategic objectives. Mileti has identified six strategic objectives that may guide emergency management in the context of promoting sustainability. These six objectives are, in fact, a critical part of sustainable community development generally. They provide a good avenue for broadening the emergency management function as a component in community planning (Mileti, 1999, pp. 32–4):

- (1) Maintain and enhance environmental quality. For example, do not reduce the capacity of the eco-system, thus creating the potential for increased losses.
- (2) Maintain and enhance the quality of life in the community. This involves efforts to define a desired quality of life, the

selection of disaster mitigation strategies that do not detract from the quality of life, and the elimination of strategies that detract from that vision.

- (3) Foster local resilience and responsibility.
- (4) Recognize that vibrant local economies are essential. A strong local economy is itself a mechanism for disaster mitigation.
- (5) Ensure inter- and intra-group equality as well as inter-generational equality. Sustainable disaster mitigation treats all ethnic, racial and social groups equally. Most importantly, it does not pass on costs to future generations.
- (6) Adopt a local consensus-building approach. Sustainable disaster mitigation involves all public and private stakeholders. Process is as important as outcome.

These six objectives express the connection of the emergency management function to broader community development activities. To the degree that they may guide emergency management practitioners and the work of other institutional and community actors, they suggest a larger role for the emergency management function.

Emergency managers, as is implicit in this discussion, must see themselves involved in the broader process of community development. All local political, economic and social institutions must participate in a coordinated effort. Emergency managers must begin to see their work as a part of local consensus building and as working on a common agenda with other community leaders and actors. It is commonly accepted that all relevant public and private stakeholders must be brought into the emergency management-planning process. Equally important, emergency managers must be brought in as stakeholders and institutional participants in the network of community leaders and policymakers and as collaborators in community planning and problem solving.

As noted earlier, emergency management has often tended to be an event- or disaster-driven system. Reacting to individual disasters, focusing on response often to the neglect of mitigation and other disaster phases, and a focus on narrow technical capabilities often define the world of the emergency manager. In the context of our analysis, however, the technical components of emergency management in each phase of

the function (mitigation, preparedness, response, recovery) may be seen as part of a holistic system. This entails the integration and consistency of all technical components with integrated policies and programs related to disaster mitigation as it relates to the building of sustainable communities. In essence, all that has been discussed in this analysis points to the need to broaden and redefine the role of emergency management.

Conclusion

While the literature places the emergency management function in a wider framework, it is clear that emergency management practitioners and community leaders and decision makers have not implemented this view in the world of practice. Impediments to the linkage of hazard mitigation, sustainability, community planning and emergency management limit the possibilities of successful implementation of hazard mitigation strategies. They also diminish the effectiveness of sustainable community development by the exclusion of emergency management from the process of community planning. The removal of these impediments will require new approaches to the training of all public managers and planners, the integration of all community policies in the context of sustainability, and a redefinition of emergency management, such that it becomes an integral part of community planning and development activities.

Proposed reforms in emergency management systems, policy and practice are abundant, and many will lead to improvements in hazard mitigation. But there is a larger chore that needs to be performed, if any such proposals can maximize their potential. A broader and more inclusive definition of the emergency management function is required. A more proactive and strategic approach is needed, one that

expands the operational involvement and mission definition of emergency management, thereby linking it to the broader goal of sustainable community development.

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