POLITICS OF HAZARD MITIGATION

By Carla S. Prater and Michael K. Lindell

ABSTRACT: The formulation, adoption, and implementation of mitigation measures is an intensely political process that hazards professionals need to understand if they are to be effective in reducing community hazard vulnerability. We describe the process by which either focusing events such as disasters, or policy entrepreneurs such as involved professionals, can frame hazard mitigation as a salient issue on the community agenda. In addition, we discuss the demands of policy formulation, particularly the importance of mobilizing a constituency for hazard mitigation among affected stakeholders in the community. Finally, we conclude by showing how a widely used model of policy implementation reveals critical features that community hazard mitigation policies must have if they are to be implemented successfully by administrative bureaucracies.

INTRODUCTION

In the wake of Hurricane Andrew in 1992, the 1993 Midwest floods, and the 1994 Northridge earthquake, and recurrent devastating tornadoes in the middle of the country, most people recognize that natural hazards are a threat to be reckoned with. However, there is considerable disagreement about what can be done about these threats to reduce the toll of casualties and property destruction. In recent years, attention has turned increasingly to hazard mitigation as a way of protecting ourselves from losses caused by natural hazards. For example, after Hurricane Andrew destroyed 53,000 houses in South Dade County, the strict South Florida Building Code was enacted that requires storm shutters, high resistance to wind and debris impact, and eight inspections during construction. Unfortunately, builders have complained about the cost of meeting the code’s stringent requirements. Their attempts to supersede this stringent regional code with a weaker statewide code have stimulated intense lobbying by Florida citizens who want the state legislature to keep the strict provisions of the South Florida Building Code.

The conflict over the South Florida Building Code illustrates the intensely political nature of natural hazard risk reduction. These political conflicts arise for at least three reasons. First, there are multiple stakeholders in the debate who disagree about values such as property rights and government intervention, and who also vary in their sensitivity to economic incentives such as short-term profit. These stakeholders include homeowners, business owners, developers, builders, realtors, insurers, legislators, and bureaucrats. Second, there are multiple layers of government that have considerable independence of each other. Higher level (i.e., federal and state) governments attempt to limit the policy space in which lower level (i.e., county and city) governments can maneuver, but lower level governments can, in turn, pressure higher level governments to change their standards, modify their programs, or provide money. Third, citizens are no longer, if they ever were, passive consumers of policy; instead, they are actively involved in policy development and adoption.

In spite of uncertainties and disagreements, we do know quite a lot about natural hazard risk reduction. According to Burton et al. (1978), a community’s vulnerability to environmental hazards is a function of the interaction of three elements: (1) the physical environment; (2) the human environment; and (3) the adjustments we make to cope with the hazard. In turn, hazard adjustments can be classified according to the four phases of emergency management: (1) mitigation; (2) preparedness; (3) response; and (4) recovery. The first two phases are comprised of predisaster hazard adjustments. As Lindell and Perry (in press) have observed, hazard mitigation provides passive protection at impact (e.g., land use and building construction practices that prevent property destruction). Emergency preparedness supports active response after impact (e.g., warning systems, emergency response plans, and mutual aid agreements that allow emergency personnel to respond more quickly and effectively).

Such predisaster measures unquestionably are effective, but local governments often are reluctant to adopt risk reduction policies either for repetitive hazards such as floods (Burby and French 1981; Burby et al. 1985) or catastrophic hazards such as earthquakes (Wyner and Mann 1986; Berke and Beatley 1992). There are many possible explanations for this reluctance, but three principal reasons stand out. First, the risks involved in developing hazardous areas tend to be discounted by residents and local governments unless they have recently experienced a disaster. Second, even in areas that recently have suffered serious damage, other problems like crime and education usually absorb more attention, time, and money. Third, hazard-prone areas tend to have other amenities, especially scenic beauty, that make them prime real estate. This creates pressures for development in pristine areas,
and for more intensive use of land that already is developed. As development continues, hazard mitigation becomes more difficult and costly.

Notwithstanding these impediments, successful adoption and implementation of hazard mitigation policies by local governments is possible (Berke and Beatley 1992). The problem is to get the right people and organizations involved and for them to understand the political process well enough to implement effective policy. The local level of government has been somewhat neglected in studies of hazard adjustments, but it actually is the key to successful hazard mitigation policy because disasters strike at the local level. Specifically, natural disasters destroy property that is located in hazard-prone areas and has not been adequately designed and constructed to accommodate extreme wind, water, or seismic forces. Thus, the key to reducing disaster losses is to change land use and building construction practices. New structures must avoid highly hazardous areas or, alternatively, must be properly designed and constructed to withstand the extreme forces of nature. Moreover, only 2% of the building stock is added each year, so it is also important to properly retrofit existing structures or remove them altogether. The federal government is highly motivated to reduce disaster losses because the disasters that are only a statistical probability at the local level are a mathematical certainty at the national level. However, federal agencies own just a fraction of the nation’s investment in buildings and infrastructure. Indeed, a substantial portion of the nation’s infrastructure is controlled by local government and most of the nation’s buildings are owned by households and private sector organizations. Moreover, regulations governing land use and building construction practices are established at the local level. Consequently, federal and state hazard mitigation policy can only be carried out at the local level, underlining the importance of good intergovernmental relations for successful policy adoption (May and Williams 1986).

The adoption of policy is only the first step. Many jurisdictions have adopted good hazard mitigation policies that proved to be ineffective because they were poorly implemented. Many of the same institutions and groups involved in policy adoption also are involved in policy implementation, but their roles may change as the policy process progresses. The next section will deal with the ways people can affect the adoption of hazard mitigation policies in their communities. The following section will cover some of the issues facing local level governments and communities as they implement their adopted hazard mitigation policies.

GETTING IT ON THE BOOKS: ADOPTION OF HAZARDS MITIGATION POLICY

Linking Citizens and Governments

In an open, democratic political system such as ours, citizens have many points of access to the policy-making process. Local representatives are particularly accessible, but state and national level legislators receive frequent input from the electorate, as do members of the executive branches at all levels. Elections are obvious occasions for such bottom-up communication, but the pervasiveness of polling shows that most elected officials receive feedback from the citizenry between elections as well.

The bureaucracy is another point of access for the citizen. Indeed, in some ways it is the most important point of access because it is government agencies that establish the specific regulations by which legislative acts are implemented. From platting to utility hookups, it is the bureaucracy that interprets the legislature’s intent in approving land use and construction permits. Most administrative rule-making processes have a public comment period during which citizen input can have quite a substantial impact, as shown by the protest in Florida over the proposals to weaken the building code. As noted earlier, this is an opportunity for citizens to make their views known, but this also is a period when lobbyists and other interest groups are extremely active.

As individuals, citizens can express their opinions by traditional media such as voting, letter writing, telephoning, and face-to-face meetings, as well as through more recent technologies such as faxing and e-mailing. No matter how technologically advanced the communications medium, or how articulate and scientifically rigorous the message conveyed, numbers count. Consequently, it is vitally important to involve large and politically active groups of citizens in the policy process. Like-minded stakeholders such as neighborhood associations, environmental action groups, Red Cross volunteers, churches, and others need to involve themselves in the development and adoption of hazard mitigation policy. These groups can be mobilized for various forms of action: letter-writing or e-mail campaigns, sponsoring of petitions, and door-to-door canvassing on behalf of candidates or issues. Unfortunately, mobilization on hazards-related issues is infrequent. A recent survey of residents in six California and Washington communities found very few respondents had taken any political actions on seismic safety (Lindell and Prater 1999). Only 7% had written letters supporting community action and only 3% had joined a hazard-relevant neighborhood organization. By contrast, much larger percentages had performed such household emergency preparedness actions as storing water (59%), or food (71%), or developing a household earthquake plan (41%), or had performed household hazard mitigation actions such as strapping heavy furniture to walls (47%) or installing latches on cupboards (22%).

Political Agendas

Studies of agenda setting have been very effective in advancing our understanding of the process by which policies are adopted at all levels of government. Hazard policies are particularly suited to strategies based on agenda setting because of the important role disaster events can play in raising awareness of the problem. Agenda setting
is a critical step in the policy process because it determines not only what is considered, but how it is defined, or framed.

It is important to recognize that there are many different political agendas. The first of these is the systemic agenda, which is the informal, mass media dominated arena within which public discourse is conducted. We are accustomed to seeing disasters on this agenda, since it has been estimated that up to 25% of the evening news coverage in the United States is about disasters (Gans 1979). Agendas differ from one social unit to another: the nation, the state, the community, and even households have agendas. Nonetheless, in any organization, the agenda includes the list of problems on which action is likely to be taken. Of particular importance is the institutional or governmental agenda, which consists of issues actually before a particular organization such as Congress, a city council, or a local planning department.

One important characteristic of political agendas is that they are unstable over time (Baumgartner and Jones 1993). Issues compete for attention and resources, and no issue is able to totally dominate the agenda for very long. If an issue maintains a prominent position on the agenda for an extended period of time, it has high salience. Unfortunately, hazards tend to have low salience because they occur infrequently in any given community, and people tend to act as if a low probability event is “something to worry about later, if ever.” Survey data indicate that even dramatic natural hazards such as earthquakes are not salient to most people, even in regions subject to recurrent disasters (Lindell and Prater 1999).

So how do issues get on the agenda? One way is as a result of a focusing event (Birkland 1998) such as a disaster that gets public attention. This is unsurprising: people’s concerns when their household is recovering from a disaster are different from the issues dominating their attention when no such extraordinary event has occurred. Thus, an experienced disaster is a powerful way to start the policy process moving. Even a disaster that has occurred within a neighboring community [or country (Lavell 1994)], especially one that is perceived to be similar in its hazard vulnerability, can provide a very powerful agenda setting effect. Indeed, a major focusing event can open what many authors have referred to as a window of opportunity (Kingdon 1984). In the case of hazard mitigation policy, this window usually occurs in the immediate aftermath of a disaster when the community is most receptive to policy changes. However, the public’s attention span almost certainly will be short and soon shift to other issues. For example, Pennebaker and Harber (1993) reported that San Francisco residents’ frequency of thought and discussion about seismic hazard had virtually disappeared within three months of the Loma Prieta earthquake. Thus, by the time that disaster recovery is well under way, city councilors are less likely to be willing to risk promoting any specific policies that could produce identifiable winners and losers. This is particularly im-

import because the benefits of hazard mitigation generally are realized only when the next disaster occurs, are difficult or impossible to quantify, and tend to be broadly distributed across the community. By contrast, the costs of hazard mitigation are incurred immediately, are easy to calculate, and generally are borne by a relatively small number of stakeholders. If a critical mass of stakeholders reaches consensus on a policy ahead of time, it will be easier to marshal support for its passage before the window of opportunity closes. The brief duration of the window of opportunity requires there be well-developed policy alternatives and a clear strategy of action established even before it opens.

The nature of the type of shift that can occur in support for hazard mitigation policy is illustrated in Table 1, which shows a hypothetical distribution of stakeholder opinion before, during, and after the window of opportunity has been opened by a disaster. As the first row indicates, political support for hazard mitigation before a disaster ($t - 6$ months) is exactly balanced by political opposition, and most people are neutral (because they are inattentive, or uninformed, or ambivalent about the issue). Immediately after the disaster ($t + 6$ months), public opinion has shifted in support of hazard mitigation, with twice as many strong proponents or weak proponents as before. Note, however, that there are no dramatic conversions to the cause of hazard mitigation. The additional strong proponents came from the ranks of the weak proponents and the extra weak proponents came from the ranks of the neutrals. Moreover, some of those who now are neutrals came from the ranks of the weak opponents, while the strong opponents have not changed their opinions at all.

Long after the disaster ($t + 18$ months), the window of opportunity has closed because of backsliding. Now, there are slightly more weak proponents than weak opponents, but these generally will not have a significant impact on a city council vote because so few of them will take the time to attend the meeting. More important is that, once again, strong opponents exactly offset strong proponents, and a plurality of voters will be apathetic bystanders to the policy debate.

### Policy Entrepreneurs

Whether or not issues get on the institutional agenda depends on many factors, but one of the most important is the existence of a policy entrepreneur. This is an advocate or champion who will sponsor an issue, make sure

<table>
<thead>
<tr>
<th>Time (months)</th>
<th>Strong proponents (%)</th>
<th>Weak proponents (%)</th>
<th>Neutrals (%)</th>
<th>Weak opponents (%)</th>
<th>Strong opponents (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$t - 6$</td>
<td>5</td>
<td>20</td>
<td>50</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>$t + 6$</td>
<td>10</td>
<td>40</td>
<td>35</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>$t + 18$</td>
<td>5</td>
<td>25</td>
<td>50</td>
<td>15</td>
<td>5</td>
</tr>
</tbody>
</table>

TABLE 1. Hypothetical Changes Over Time in Stakeholder Opinions about Hazard Mitigation Policy
it stays on the agenda, and mobilize community support for relevant policies (Berke and Beatley 1992; Olson and Olson 1993). It may be a simple case of an elected official looking for an issue to gain attention, build name recognition, and win reelection, or it may be that someone in a government agency or a relevant profession has a long-term interest in an issue and sees a need to move beyond reactive policies.

The ideal hazard mitigation policy entrepreneur would combine technical expertise in hazards with political expertise and personal commitment. For example, Olson and Olson (1994) give significant credit to the election of a professional geologist to the Utah House of Representatives for the establishment of the Utah Seismic Safety Advisory Council (USSAC). Nonetheless, individuals with this unique combination of skills are rare, so successful hazard mitigation policy entrepreneurs must build coalitions to compensate for the areas in which they have weaknesses. At the local level, city council members might launch a crusade to make their community more hazard resistant by utilizing technical assistance from architects, engineers, planners, and scientific associations. Alternatively, community planners and emergency managers with the necessary hazard knowledge could try to link mitigation policies to urban development and environmental issues that are of interest to neighborhood associations, particularly those who have become active in the aftermath of a disaster. In this way, technical specialists can exert upward influence upon policymakers by mobilizing a political constituency for more farsighted hazard policies (Lindell 1994).

It also is important to recognize that there may be powerful interests who are entrepreneurs for policies that are antithetical to hazard mitigation. These people will work actively to keep hazard mitigation off the agenda altogether (Bachrach and Baratz 1962). In some cases, there may be philosophical opposition to any governmental activity affecting private land-use decisions. Indeed, Olson and Olson (1994) concluded that part of the reason for the demise of the USSAC was the changing political culture of the state legislature. Alternatively, the reason may be personal self-interest. For example, if developers plan to site a major shopping center development in a community’s floodplain, they probably would prefer to do all the planning quietly and get all the necessary permits granted without controversy. This would be an example of the successful use of an insider strategy in which the issue of protecting floodplains from development has been kept off the community’s agenda. It may be fairly easy to keep a project quiet when permits are granted by local authorities, but regional, state, or federal authorities usually have public notice and participation requirements that prevent the use of insider strategies.

In other cases, an insider strategy may not work because the issues involve many attentive stakeholders whose interests are vitally affected. Attentiveness by the news media is one important element in getting and keeping an issue on the informal, systemic agenda. In particular, media attention that is sufficient and appropriate (that is, oriented toward serious mitigation measures rather than sensationalism) is necessary to the adoption of hazard mitigation policies ( Olson 1985). Such attention serves to bring the issue to the public’s awareness and helps provide a political atmosphere favorable to the adoption of mitigation measures.

Accordingly, policy entrepreneurs can help to put hazard mitigation on the agenda by cultivating media contacts, and they can do this more successfully if they give briefings in nontechnical language, because most reporters have little or no scientific background. Olson and Olson (1994) noted that one of the reasons for the demise of the USSAC was its failure to use the media to mobilize relevant interest groups. In seeking contact with the media, policy entrepreneurs should be aware of differences between electronic and print media, as well as the ways in which local media differ from their regional and national counterparts. It is well-known that television reporters seek visually arresting images and brief “sound bites” for the evening news, while the print media can provide more depth and analysis in their coverage. Moreover, local media tend to emphasize personal reactions to events and the maintenance of community cohesion. By contrast, regional and national media outlets seek to inform the public by documenting events, disseminating scientific explanations, and articulating the opposing points of view in policy controversies (Earle et al. 1981). If long-term contacts are maintained, it is possible to get stories about hazard mitigation into the local media even during the period between disasters. This can be accomplished by connecting the issue to the national and international news, which paradoxically, is quite dependable in its disaster coverage; even on a slow news day, a disaster is occurring somewhere. Policy entrepreneurs can draw upon these events to emphasize that “it can happen here, too.” Otherwise, hazard mitigation will be shoved off the agenda by other important issues and eventually die of neglect.

**Issue Framing**

Issue framing refers to the way in which issues on the agenda are talked about. Issues are framed in different ways depending on who is talking about them. For many years, emergency management in the United States was framed in terms of the Cold War confrontation with the Soviet Union. Only recently, with a shift in framing from Civil Defense to Comprehensive Emergency Management, has hazard mitigation appeared on the systemic agenda. Furthermore, disasters for many years have been referred to as “acts of God”—events that are impossible to predict, let alone to prevent. But increasing acceptance of the idea that disasters are at least partly a result of vulnerability created by human actions has increased the prominence of hazard mitigation on the governmental agenda.

Scholars have noted that political issues may not be
defined immediately as political problems. Rather, they can exist as conditions for some time before the existence of feasible coping strategies moves them into the realm of public discussion as problems that are amenable to solutions (Rochez and Cobb 1994). Thus, the first stakeholder group to frame an issue may seize a significant political advantage, especially if it is successful in linking its proposed policy with widely-shared public values. As an example, consider the “wise use” and “property rights” movements, which have mobilized opposition to the regulation of private property for the public good by framing the issue as one of “taking.” Those who support land-use regulations as a means of promoting hazard mitigation must overcome the taking definition by rephrasing the issue in terms of the linkage to an alternative, and ideally, more deeply held, value. For example, proponents can reframe the issue of land-use regulation as one of balancing property rights with responsibilities that also must be accepted.

A variation on this strategy focuses on the externalities that are unfairly imposed on others when upstream development of private land creates risks for downstream property owners who may be forced to seek relief when disaster strikes. More forcefully, hazard mitigation advocates can frame the issue as one of “ending public handouts to those foolish or greedy few who are endangering their own property and that of their neighbors through unbridled development.” Indeed, FEMA’s publicity campaign has framed the issue along these lines by documenting the problem of repetitive losses in its flood insurance program.

Policy Formulation

Hazard mitigation policy entrepreneurs must have a set of policy proposals on hand before they attempt to shape the agenda. If not, they run the risk that policymakers will find the issue too overwhelming and ignore it on the assumption that “there is nothing we can do anyway.” As the reframing of an issue from a condition into a problem becomes increasingly widespread, different stakeholders will propose solutions (Kingdon 1984; Anderson 1994). During this stage, many policy alternatives will emerge. This is a critical stage in the process because policy formulation is a more technically demanding process than agenda setting. Drafting of legislation is crucial to the success of the policy because laws that are hastily drafted and poorly worded can have negative effects on the implementation and the eventual effectiveness of the policy.

What are some effective mitigation policies that local policy entrepreneurs could adapt to their communities? Research has pointed out some of the most successful. The first thing a community must do is to identify the hazards to which the community is vulnerable and assess the severity of each threat. Here, a substantial investment in hazard mapping can pay off in the long run by informing decision making with an adequate fact basis.

Next, proposed policies must be developed with the local political context in mind. It is crucial to define clearly who are the targets of a policy (i.e., what types of households and businesses), what activities are to be regulated (i.e., land-use practices and building construction practices), and what influence mechanisms are to be used (i.e., social information, economic incentives, and legal penalties). With regard to the activities to be regulated, government may seek to avoid the construction of residential, commercial, or industrial structures in frequently flooded wetlands. Such wetlands serve important hazard mitigation functions by absorbing wave energy during hurricanes and retaining excess water during riverine floods. Alternatively, the policy may be directed toward ensuring that houses within floodplains are elevated, those near the coast have adequate wind resistance, and those near fault lines have seismic safety features.

To achieve the desired land-use and building construction practices, governments can use hazard awareness campaigns to make households and businesses aware of the risks they face and of suitable hazard adjustments for reducing their vulnerability. Information campaigns based upon voluntary compliance tend to be politically acceptable but have not been based upon contemporary scientific theories of social influence and, to date, have had limited success (Lindell et al. 1997). Alternatively, governments can motivate the adoption of hazard-resistant land-use and construction practices by providing economic incentives such as low interest loans or tax credits. Of course, the money for such incentives must come from somewhere and cash-strapped local jurisdictions may not be able to provide it. Finally, governments can require hazard-resistant land-use and construction practices as a condition for construction permits. Of course, verification of compliance requires on-site inspections, and the problems with such inspections are extremely well known (Lindell et al. 1997).

More broadly, there is a significant degree of scholarly support for the idea that a combination of risk communication, land-use planning, building codes, and hazard insurance is an excellent way to address natural hazards (Burby 1998). Whatever the combination selected, successful implementation requires that the policy be consistent with the community’s capacity (e.g., tax base, agency capabilities) and commitment (especially the community values articulated in issue framing).

Mobilizing a Constituency for Hazard Mitigation

When developing any public policy, care should be taken to include members of politically active stakeholder groups to ensure that their interests are considered. This is especially important in the case of hazard mitigation, because these policies require either a present investment (e.g., tax money allocated to agency budgets) or opportunity cost (e.g., a lucrative land development project foregone) in order to obtain an uncertain future benefit (reduced disaster losses). The typical stakeholder groups that should be considered at the local level are those that
have been mentioned already: business leaders, elected officials, government agency staff, civic groups, church leaders, and neighborhood associations. All of these groups have roles to play in providing for community hazard mitigation. For example, business leaders may need to change their plans for expansion if it would mean encroaching on a floodplain and perhaps putting the community at risk from toxic spills during flooding. Their cooperation with the community’s hazard mitigation program may be facilitated by information about the risks they are taking and, perhaps, economic incentives such as tax credits to help them finance mitigation measures such as structural elevation or relocation to a less hazard-prone area.

Considerations other than economics should be addressed as well. Agencies such as the public works department may be accustomed to dealing with hazards, but feel threatened when the decision-making process is expanded to include meetings with neighborhood groups. As anonymous bureaucrats, they may not be accustomed to being held personally accountable for technical decisions, and may equate citizen participation with needlessly looking for trouble. Conversely, some neighborhoods that are especially vulnerable to hazard impact may have a large proportion of lower income or ethnic minority residents who lack knowledge about, or mistrust, the political system. All of these concerns need to be balanced because any perceived unfairness in the policy itself or its adoption is likely to cause problems in the implementation phase. Even after a policy has been developed, there are many veto points at which interests can block the implementation of policies they consider undesirable.

The key to getting policies adopted is persistence, because conflict is certain and some interests are likely to be threatened by any policy change (Glick 1992). The successful policy entrepreneur may spend decades promoting a course of action before seeing results. By the 1950s, for example, researchers already had been advocating a change in the Army Corps of Engineers’ (ACE) flood control policies along the Mississippi River for over 20 years (White 1958). Yet it was only after the floods of 1993, nearly 40 years later, that the Corps began to make a concerted effort to de-emphasize structural measures for flood hazard mitigation. The necessary coalition building takes time, as does the legislative process. And even after a policy has been adopted, the story is not over because successful policy implementation is needed to ensure that hazard mitigation policies are effective.

Some of these ideas about agenda setting, policy entrepreneurship, issue framing, and policy formulation can be illustrated by the relocation of the unincorporated community of Allenville, Arizona (Perry and Lindell 1997). Allenville first flooded on New Year’s Eve of 1965 and experienced its first devastating flood in March 1978. This inundation was followed by other major floods in the late 1970s and early 1980s. Over time, members of the Allenville Citizens for Progress became increasingly concerned about the flooding and concluded that it was caused by releases intended to protect dams on three rivers upstream from Allenville. The community originally framed the problem as one of getting the river authorities to stop the releases, but ultimately accepted the conclusion of an ACE study that this would increase the risk of a worse outcome—dam failure. Community leaders next examined structural flood protection through levees or channelization before selecting a policy of community relocation. The Allenville Citizens for Progress group worked with the ACE and the State Division of Emergency Management to explain the flood problem, describe alternative solutions, explain the advantages of the relocation option, propose a method of implementation, and seek input from community residents regarding potential implementation barriers.

MAKING IT WORK: IMPLEMENTATION OF HAZARDS MITIGATION POLICY

The implementation stage of policy-making has been studied almost as extensively as the agenda-setting stage (Pressman and Wildavsky 1973; Palumbo and Calista 1990; Wood 1991, 1992). Implementation is defined as those events and activities that occur after a policy is adopted, and which include the administration of the policy and its actual effects (Mazmanian and Sabatier 1983). Implementation is crucial because all policies are filtered through “street-level bureaucrats.”

Implementation of hazard mitigation policy depends substantially upon governmental structure. In the United States, the government has a federal structure, so strong state and local governments can support or thwart the implementation of federal policy—which ever suits their purposes. Accordingly, these actors need to be closely involved in the agenda setting, policy formulation, and policy adoption stages, in order to ensure that implementation occurs in accordance with legislative intent.

Mazmanian and Sabatier (1989) have developed a widely used model of policy implementation (Table 2), highlighting specific variables and their interactions that produce varying levels of success in policy implementa-

<table>
<thead>
<tr>
<th>Tractability of problem (1)</th>
<th>Adequacy of statute (2)</th>
<th>Nonstatutory factors (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Technical difficulties</td>
<td>1. Clear and consistent objectives</td>
<td>1. Socioeconomic conditions and technology available</td>
</tr>
<tr>
<td>3. Target groups as percentage of population</td>
<td>3. Initial allocation of resources</td>
<td>3. Attitudes and resources of constituency groups</td>
</tr>
<tr>
<td></td>
<td>5. Decision rules of implementing officials</td>
<td>5. Commitment and leadership skill of implementing officials</td>
</tr>
</tbody>
</table>
tion. Three types of independent variables are included in this model. First is the “tractability of the problem,” or how easy it is to solve. Hazard mitigation and socioeconomic development both are highly complex phenomena, so overly simplistic policies can have unintended consequences while comprehensive policies are difficult to develop. Consequently, hazard mitigation policies usually rank low on the tractability dimensions and are difficult to implement.

The second group of variables involves the “ability of the statute to structure implementation.” This is where statecraft and legislative skill are needed. One item included here is an adequate causal theory, or a clear idea of how hazard mitigation policy will reduce casualties and property losses. The second component is a set of clear and internally consistent policy objectives that do not work counter to each other. This is extremely challenging because hazard mitigation policy must be carefully crafted to achieve a balance between two goals. On the one hand, clear directives are needed to produce results consistent with the intent of the policy. On the other hand, bureaucrats need the freedom to adapt the policy to the varied situations they encounter. The hazards mitigation policy arena is especially prone to changes over time, so a significant amount of bureaucratic discretion probably will be necessary. Another important variable is the percentage allocation of governmental resources to hazard mitigation, which is highly dependent on the fiscal resources available to the jurisdiction at the time of policy passage and on the importance of hazard mitigation relative to other issues on the agenda.

The third set of variables affecting implementation consists of “nonstatutory factors.” The first of these is the jurisdiction’s socioeconomic condition and the level of technology available to address the problem. These are constraints over which policymakers have little control in the short term. However, these constraints can be relaxed by means of investments in sustainable economic development and technologies such as geographic information systems, both of which are increasingly available to local governments. The second variable is one that carries over from previous stages of the policy process—the level of public support for hazard mitigation policy. Public support tends to be cyclical, but it can be stabilized and even increased by persistent efforts to keep hazard mitigation on the systemic agenda. Indeed, this affects the third and fourth factors—the attitudes and resources of constituency groups and support from the state or local government—which can be affected by coalition building activity. Finally, implementing officials need to develop high levels of managerial and political skills to ensure successful implementation of hazard mitigation policies.

Mazmanian and Sabatier’s keys to effective policy implementation, shown in Fig. 1, are all applicable to hazard mitigation policy. For example, there is a mandate for land-use planning in some states (Key 1), and we know that land-use planning can be a valuable tool for the mitigation of the effects of natural disasters (Key 2). Land-use planning is not used as much as it could be, however, and the reason may lie in a lack of capacity on the part of the implementing bodies, or a lack of commitment to the use of land-use planning (Keys 3, 4, and 5). Although the social environment of the United States is stable (Key 6), frequent turnovers of political leadership at the local level can hamper the consistent use of any policy, including land-use planning for the mitigation of natural disasters.

Mazmanian and Sabatier’s model provides an important basis for understanding policy implementation, but it neglects one factor that is critical to hazard mitigation policy—the hierarchical relationships among federal, state, and local governments. This issue was the focus of May and Williams’ book, Disaster Policy Implementation (1986), which examined shared governance among multiple levels of government. The authors described four modes of shared governance: limited regulatory, general regulatory, mobilization, and collaborative, which are distinguished by the form of partnership between federal and state governments (general or limited) and the form of activity (regulatory or programmatic) involved. May and Williams (1986) found that seismic safety was an exemplar of the collaborative mode, which is characterized by general partnership and programmatic activity. They observed that, even though federal involvement in earthquake mitigation began with passage of the 1977 Earthquake Hazards Reduction Act (Public Law 95-124), few collaborative efforts to improve the states’ capacities for seismic risk reduction had been successful by the time of their study. According to May and Williams, problems in the shared governance of seismic safety arose at both ends of the partnership. At the federal level, technical expertise was in short supply and continuing personnel turnover hampered contacts with state agencies. Among the states, only California exercised initiative and showed a willingness to invest resources in the program. Problems arose between the federal government and the State of California mainly as a result of disputes over funding and control of projects.

Another important aspect of hazard mitigation policy is the effect of state mandates on local adoption and implementation of hazard mitigation policy. Previous research has examined the effect of mandate design on policy implementation (Mazmanian and Sabatier 1989, Van Meter and Van Horn 1975; Goggin et al. 1990). Accordingly, May (1993) compared data from five states (California, North Carolina, Florida, Texas, and Washington) to dis-

---

**FIG. 1. Keys to Effective Policy Implementation [Adapted from Mazmanian and Sabatier (1989)]**

1. Clear and consistent enabling legislation
2. Sound causal theory behind the policy
3. Assignment of implementation to sympathetic agencies with sufficient resources to implement the policy
4. Skillful leadership of the implementing agencies
5. Active support by constituency groups and key governmental actors
6. Stable political and social environment
cover the links between the design of hazards relevant aspects of land-use mandates and the implementation of hazards mitigation policy. May’s analysis examined the effects of five independent variables: mandate facilitating features, mandate controls, mandate goal clarity, agency capacity, and agency commitment. Two of the state mandate variables had a significant positive impact on the level of state implementation. These were mandate facilitating features, which is defined by characteristics meant to increase local government commitment and capacity to address mandate goals; and mandate controls, which are the tools state agencies have to affect local government efforts.

Contrary to the predictions of Mazmanian and Sabatier’s model, mandate goal clarity had no significant effect. It seemed to be sufficient for agency personnel to have a clear and consistent view of their duties, even if the statute was vague. The level of commitment by the state agency charged with implementing the mandate also had a significant positive effect, while agency capacity did not, again failing to support Mazmanian and Sabatier’s emphasis on agency capacity. This may be because, if an agency is strongly committed to a goal, sufficient capacity will be allocated to meet that goal even if other programs must suffer. May’s (1993) research confirmed the importance of an adequate level of technical expertise, low turnover of personnel, agency commitment to hazards mitigation, and the existence of adequate facilitating features and controls built into the mandate for the successful implementation of hazard mitigation policy.

Further analyses addressed the factors that affect mandate strength (May 1994). The most important factors af-

St. Louis MO lies in the New Madrid Fault Zone and most of its buildings are vulnerable unreinforced masonry structures. In 1976, the Department of Housing and Urban Development escalated the seismic standards for Federal Housing Authority and Veterans Administration loans in this region from the Building Officials and Code Administrators’ (BOCA) Basic Building Code to the more stringent Uniform Building Code (UBC) Zone II requirements (Drabek, Mushkatel and Kilijanek 1983). Concerned about the effect on new construction, local developers, contractors and officials sought technical assistance in challenging the policy. HUD officials viewed local opposition as a threat to their entire policy, which they felt was more than adequately justified by the safety threat to local residents. However, technical experts attacked the scientific basis for HUD’s policy with the assertions that inclusion of St. Louis in Zone II was a cartographic error, the assumed 300-500 year return intervals were in error, and projected damage from a repeat of the 1811-1812 earthquakes was overestimated. The city lobbied the local HUD office to request that the HUD Secretary exempt St. Louis from the seismic requirements and asked its congressional delegation, the Home Builder’s Association, and public interest groups to support this request. By 1981, the BOCA I Code was used for all structures except multi-family housing rehabilitation projects, where the UBC Zone II requirements were applied. Even the impact of this requirement was minimal because it was enforced by the HUD regional office in Kansas City and the local HUD office in St. Louis, not by the city or county of St. Louis. Consequently, most engineers and developers contacted by the researchers were uncertain as to which standards should be applied.
fecting the strength and style of state mandates for natural hazard mitigation were the presence of a moralistic state political culture [as opposed to an individualistic or traditional political culture (Elazar 1994)], lawmakers’ perceptions of the seriousness of the hazard, and the political power of the target population. These results suggest that it would be useful for local government officials to impress upon the state legislators the importance of supporting their efforts at hazard mitigation and for affected populations to organize in order to increase political power.

These principles can be illustrated by the federal government’s attempt to implement seismic provisions in St. Louis during the late 1970s. As the case data reported by Drabek et al. (1983) indicate (Fig. 2), the Department of Housing and Urban Development (HUD) failed to meet any of Mazmanian and Sabatier’s (1983) keys to effective policy implementation. First, HUD does not appear to have made it clear what was the enabling legislation upon which its policy was based, and second, the causal theory behind the policy was vulnerable to attack by locals. Third, the intended implementing agencies (city and county building officials) were opposed to, rather than supportive of the policy. Consequently, their leadership skills were used to mobilize a coalition of constituency groups—including HUD’s own local office—against the policy. Finally, there was a stable political and social environment, but this was exploited more successfully by the policy’s opponents than by its supporters.

CONCLUSIONS

Hazard mitigation policy is a major political challenge facing hazard-prone communities. Policy adoption is a complex process that begins with the recognition of a problem and its emergence on the agendas of different social units—especially the various levels of government. Policy entrepreneurs must be skillful in framing hazard mitigation as an important issue in order to keep it on the agenda until adequate policy is formulated and adopted. The formulation of hazard mitigation policy is facilitated by a focusing event such as a disaster, but must be initiated even before one occurs to ensure that feasible solutions are available for adoption when an opportune moment arrives. The necessity of involving many different stakeholders, both groups and individuals, is a complicating factor that must be addressed early in the policy process. The successful policy entrepreneur must mobilize a coalition that can agree on the nature of the problem, the best solutions to the problem, and the best ways to achieve a hazard-resilient community. The fact that local government is the point of delivery for hazard policy makes it imperative that communities develop the political sophistication and technical expertise needed to get adequate hazard policy adopted and implemented in their jurisdictions.

After adoption, hazard mitigation policy is subject to revision during the implementation process. Its emphasis can be changed or it can be ignored altogether. For this reason, policymakers must adopt a policy that is based upon a firm understanding of the manner in which it will reduce casualties and property losses. In addition, they must ensure that the policy does not overburden the jurisdiction’s budget or economic base in the short-term to achieve long-term goals. Moreover, they should ensure that legislation is written in such a way that program goals are clear to the implementing agencies and that these have adequate staffing and resources to accomplish their assigned mission.

ACKNOWLEDGMENT

This work was supported by the National Science Foundation under Grant BCS 9796297. None of the conclusions expressed here necessarily reflect views other than those of the writers.

APPENDIX. REFERENCES


Lindell, M. K. (1994). “Are Local Emergency Planning Committees...
effective in developing community disaster preparedness?” Int. J. Mass Emergencies and Disasters, 12, 159–182.