INTERGOVERNMENTAL ENVIRONMENTAL PLANNING: ADDRESSING THE COMMITMENT CONUNDRUM

(Received February 1997)

ABSTRACT

Public policies aimed at environmental problems from improper land use typically work through or with the co-operation of local governments. But local governments sometimes fail to appreciate the importance of the environmental issues or programmes announced by higher level governments. In this paper, we use data on mitigation of natural hazards gathered in Florida in the US and New South Wales in Australia to demonstrate that planning mandates can suffer from gaps in local commitment to the environmental goals of higher level governments. Planning mandates must foster higher quality plans and also build supportive local political constituencies if they are to overcome this ‘commitment conundrum’. We show that the needed improvements in the quality of plans can be fostered through capacity building. Supportive constituencies can be created through programmes that enhance public awareness of environmental problems and also through provisions of environmental mandates that require local governments to undertake collaborative planning processes with affected stakeholders.

Introduction
The intergovernmental dimensions of environmental planning have gained in prominence as greater numbers of national or state governments have attempted to persuade local governments to share with them good stewardship of the environment. At the same time, the role of local governments in managing the environment has taken on new cogency. Increased recognition of the negative consequences of development and inappropriate uses of land have drawn attention to the consequences of decisions made by local governments for the quality of the environment and future environmental sustainability. Addressing these consequences entails consideration of governmental regulation of development and land use.

While it is conceivable to devise land use management policies so that they involve direct regulation by state or national governments, the political and practical realities for multi-tiered governmental systems lead to shared governance of these functions. In federalist systems of governance, state and local governments share these responsibilities. In unitary systems of governance, these functions are shared by national and local governments. The nature of the partnership is important. In the US, virtually every state has directed local governments to protect sensitive environments of one kind or another and more than a dozen require local governments to plan for growth (see Kusler, 1980; DeGrove, 1984, 1992; Bollens, 1993; Stein, 1993; Berke et al., 1996). In some instances, they have followed requirements imposed by the Federal Government. But, the state and federal requirements are perceived by some local and state governments as being overly prescriptive and coercive. State and local officials have complained about the failure of higher-level governments to fund the costs of implementation, the lack of flexibility in the required actions and the shifting to them of political blame for infringement of property rights. As a consequence of these concerns, lower-level governments can be reluctant partners in the intergovernmental arrangements and, lacking commitment, can thwart efforts to accomplish various environmental ends through management of land use (Dalton & Burby, 1994).

Recognizing these difficulties, various researchers have discussed a more flexible, so-called `co-operative' (also called `collaborative' by some analysts) form of intergovernmental policy mandate involving a shift from prescription and coercion to collaboration in environmental planning among the various levels of government (e.g. see Godschalk, 1992; Innes, 1992; May & Handmer, 1992; Bollens, 1993; John, 1994). Recent research has revealed, however, that the co-operative approach can also fail to motivate a number of local governments (Burby, 1995; May & Burby, 1996; May et al., 1996). In this case, policy failure comes not from disgruntlement over the heavy hand of higher-level government, but simply from disinterest among local governments in the goals higher-level governments seek to accomplish.

No matter what the approach to inducing attention by local governments to environmental problems, we find a basic challenge that we present as a `commitment conundrum'. The fact is that large numbers of local governments will lack the will to take on environmental problems. When forced to do so under coercive mandates, participation is either half-hearted or political backlash can result. When encouraged to take on these problems, but not forced to do so, under co-operative mandates, many local governments drag their feet. In either case, this leaves the conundrum for policy makers of figuring out how to build local commitment to environmental goals.

If intergovernmental environmental planning mandates are to be effective, it seems clear to us that they
must find a way to overcome this conundrum. In this paper we suggest some solutions, based on a comparison and analysis of the commitment of local elected officials to environmental hazard mitigation goals under both coercive and co-operative intergovernmental planning mandates. Our suggestions are based on research we have conducted concerning hazard mitigation provisions of planning mandates adopted by the State of Florida in the US and by the State of New South Wales in Australia. As explained in what follows, these two cases provide a stark contrast in intergovernmental policies governing planning and management of development in areas subject to natural hazards. Their planning mandates provide a contrast between a coercive intergovernmental policy (Florida) and a co-operative intergovernmental policy (New South Wales). In studying the willingness of local governments to carry out these policies, we seek to understand why commitment can flounder under both approaches and to identify what higher-level governments can do to solve the commitment conundrum.

**Two Exemplars of Intergovernmental Environmental Management**

Coercive and co-operative forms of intergovernmental policy entail procedural and/or substantive requirements by a state (or national) government on local governments, either as conditions for assistance or as direct orders. Each approach can in theory be used to enhance the adherence of local governments to higher-level policy objectives. But the designs differ in terms of their underlying assumptions and use of policy tools. These differences are highlighted by the two exemplars of coercive and co-operative planning mandates we examine in this paper.

Coercion and Policy Prescription in Florida, USA

The experience in Florida serves as the exemplar of a coercive and prescriptive intergovernmental planning mandate. Beginning in the mid 1960s, policy makers in Florida enacted a series of state policies governing development in coastal and other hazard-prone areas. A strong state role was established from the outset. Provisions of coastal legislation required state permits for specified shoreline development. Environmental planning legislation required state review of development proposals within designated "areas of critical state concern" and for developments with regional impacts. By the mid-1970s, broader growth management concerns led to the enactment of a planning mandate, but the mandate lacked adequate sanctions or inducements to secure across-the-board adherence to its provisions by local governments (DeGrove, 1984). A major reform of the comprehensive planning legislation in 1984 and 1985 added requirements for greater consistency in planning activities (both among levels of government and across local jurisdictions) and increased sanctions for the failure of local governments to adhere to the planning requirements and deadlines (DeGrove, 1992). The additional regulatory teeth of the legislation evidenced a strong move toward greater intergovernmental coercion.

The approach to environmental and comprehensive planning in Florida is unique among American states in the toughness in approach to local governments (see Burby et al., 1997). As a consequence, it is a good case for examining local government commitment under a well-conceived coercive intergovernmental policy design. The environmental legislation of most states has strong provisions prescribing conditions for private development in environmentally sensitive areas but contains weaker provisions concerning actions of local governments in carrying out state mandates. Florida's legislation
differs in that there are strong sanctions for local governments that fail to adhere to required planning provisions. There is an intensive state review of local plans and development regulations for consistency with state goals and guidelines, and the state negotiates compliance with jurisdictions with deficient plans and regulations so that they comply with state standards (see Innes, 1992, for a description of this process).

Co-operative Policy in New South Wales, Australia

The institution of a co-operative approach to hazard mitigation in New South Wales consists of a state floodplain management policy, adopted in December 1984, that replaced controversial features of a more coercive intergovernmental policy that existed from 1977 to 1984. The 1984 floodplain management policy sets forth a 'merits' approach to be followed by local governments when dealing with development in flood prone areas. (n2) Under this policy, local governments are required, as conditions for subsequent funding for flood control works and as a basis for establishing governmental immunity from legal liability for flood losses, to develop floodplain management plans and rules about development that lessen flood loss.

The 'merits' descriptor derives from the absence of state prescription regarding local decisions about proposed development, which the policy states are to be considered by local governments on their merits within the context of locally-developed rules. The collaborative intent of the flood policy is evident from the language officials use to describe it: "The [Flood] Policy conforms closely with the [Environmental Planning and Assessment] Act in promoting the sharing of responsibility between the different levels of government with local planning being the responsibility of Local Government" (New South Wales Government, 1986, p. 3).

Several features of co-operative policy designs are evident in this approach. The policy requires completion of a planning process, rather than particular actions for managing floodplains as conditions for future aid and waivers of immunity. The policy emphasizes goals that are presumably shared by the state and local governments, rather than prescribed standards to be met. Local governments can devise the best means within their communities for reaching the goals. A key feature of the policy design is building the capacity of local governments to undertake floodplain management.

Our Data and Approach to Analysis

Our data come from interviews with state administrators, two surveys of local governments and various secondary data sources. The first survey of local governments, conducted in 1991 as part of a comparative study of US state planning mandates, evaluated planning and other hazard mitigation efforts for a random sample of 30 local governments in Florida. (n3) The survey procedure involved personal visits and interviews with local planning directors and their staffs and a mail-back questionnaire for more detailed information about planning and land use management practices and local contextual factors such as development pressures on environmentally sensitive areas. The second survey of local governments, conducted in 1993 to examine the promise of co-operative mandates, evaluated planning and other hazard mitigation efforts in 127 local councils (local governments equivalent to municipalities in the US) subject to some form of flood risk in New South Wales, Australia. (n4) Survey data in both Florida and New South Wales were supplemented with data from the respective national censuses.

The surveys were comparable, subject to differences in terminology, in the types of questions and resultant measures of key variables. The Florida sample was limited to coastal jurisdictions, defined as counties bordering ocean or estuarine shorelines and municipalities located within those counties. The New South Wales survey sought a complete enumeration of councils with riverine or surface-water-runoff flood risks, and as such was not limited to coastal jurisdictions. Subsequent analysis showed that coastal location did not have a discernible effect on local policies. Therefore we include the entire sample of New South Wales local councils for our analyses. The sources of data, scales used to measure relevant variables and transformations employed for meeting statistical assumptions are summarized in Table 1.

The data collected in Florida and New South Wales focus on local government responses to the hazard mitigation provisions of each state’s planning legislation. Hazard mitigation—actions taken to prevent or reduce risks to life, property, social and economic activities, and environmental systems from natural disasters—is a key focus of the United Nations International Decade for Natural Disaster Reduction. Typical hazard mitigation measures include avoiding or limiting development in hazardous areas such as floodways and slide-prone hillsides, requiring developers to design buildings and infrastructure to withstand the forces of various hazards, and in some cases controlling the hazard itself through means such as flood and hurricane protection levees. This environmental policy problem is well suited for a study of the commitment conundrum. As indicated by the ‘UN Decade’, hazards are a ubiquitous policy problem which face virtually every local government in every country. Land use and development in hazard-prone areas are the source of the problem and focus of mitigation efforts; thus, this is an important environmental problem that can be addressed through local land use planning. Local government choices in mitigating hazards involve tradeoffs between economic development and environmental protection that are similar to those involved more generally in environmental planning to accomplish sustainability. Thus, efforts by higher-level governments to induce local governments to take steps to mitigate hazards embody the same general issues and challenges as other planning mandates.

The primary analytic techniques we use include comparison of commitment of local government officials and analysis of different sources of commitment. We employ descriptive statistics to set the stage and use regression analysis to control for the effects of relevant situational variables. Regression diagnostics were performed and revealed no noteworthy problems with multicolinearity or heteroscedasticity for the specified models. Our models for Florida, however, suffer from one limitation. Because this study is based on data we had collected previously in Florida as part of another study, the Florida sample is small and limits our ability to rule out sampling error as an explanation for our regression findings. However, to the extent that findings in Florida are paralleled by those in New South Wales, we believe readers can have confidence that the Florida results would not substantially change with a larger sample.

A methodological caveat is that various situational factors could produce complications for assessing the influence of policy features on governmental commitment to addressing environmental hazards. Factors with that potential include the exposure of local governments to hazards and differences in
growth pressures. In combination, those two factors could create a climate that is conducive to governmental attention to environmental problems. To deal with this threat to internal validity, we measured growth rates and the risk of loss from natural hazards and controlled for them statistically in multiple regression analyses. Nevertheless, to the extent that other, unmeasured factors affect local governmental commitment, our findings may overstate the influence of the policy choices we examine.

The selection of Florida and New South Wales for examining the commitment conundrum with respect to hazard management stems from the desire for the larger study from which this paper is drawn to contrast the coercive (Florida) and co-operative (New South Wales) approaches to environmental management (see May et al., 1996). For the purposes of this paper, the distinction in approaches is not that relevant since we demonstrate below that the commitment problem exists for either approach. As such, the cases can be considered as presenting two different settings for replicating our analysis of factors affecting governmental commitment. We recognize that these settings are not exact replicates since differences exist in scale, legal structures, administrative arrangements and political cultures. Although we think the similarities outweigh the differences (see May et al., 1996, pp. 11-14), the basic point for this analysis is that similar results are obtained for the two different settings. This gives us more confidence in our findings than had we only studied one programme or setting.

**Commitment under Coercive and Co-operative Planning Mandates**

The surveys of local governments in Florida and New South Wales reveal similar failures of the mandates to bring about uniformly high levels of commitment to deal with natural hazards (see Table 2). A quarter of the localities in Florida and two-fifths of those in New South Wales were served by elected officials who were only lukewarm about hazard mitigation. Less than half of the local governments in each setting were served by local officials who were highly committed to reducing losses from hazards.

These findings are consistent with other studies of the effects of planning mandates on the commitment of local governments to state planning goals and of the willingness of local officials to address problems posed by natural hazards. Dalton & Burby (1994, p. 444) studied planning mandates in the US and concluded, "general planning mandates have little impact on planners’ commitment to state objectives". In the case of natural hazards, Rossi et al. (1982, p. 9) surveyed 2000 public officials and concluded: "For the most part, political decision makers in the states and local communities do not see environmental hazards as a very serious problem, particularly in comparison with many other problems these governmental units are expected to be doing something about." Findings such as these led policy analysts Petak and Atkinsson (1982, p. 422) to conclude: "The primary impediment to the adoption and enforcement of effective natural hazards regulatory policy has to do with the 'willingness' rather than the 'capacity' of governmental law-making bodies to act".

**Examining Variation in Commitment**

Table 3 shows our analyses of factors that influence the commitment of elected officials to the hazard mitigation goals of the two mandates. Positive standardized regression coefficients indicate contributions to higher levels of commitment. The magnitude of the standardized coefficients shown in the table can be used as an indicator of the relative influence of each factor, keeping in mind issues of statistical significance. The modest coefficients of determination indicate that there is substantial variation in commitment not accounted for by the variables we examined. Nevertheless, to the extent
that variation in commitment can be explained, our results call attention to three factors: quality of plan; previous natural disasters; and constituency attention to natural hazards.

Both planning mandates work to affect local government commitment to state policy objectives through requirements that localities prepare plans. As shown by our regression results, the quality of the resulting local planning effort has a strong effect on the commitment of elected officials to state policy objectives—in this case, to mitigation of natural hazards. Plans can build commitment in two ways. First, the information provided in a plan (the plan's fact basis) serves a ‘frame setting’ function that can help both elected officials and constituency groups better understand their situation (see Faludi, 1987; and Alexander, 1992). Second, when preparation of a plan actively involves citizens in problem solving, they can reduce conflict and produce consensus that hazards are a serious community problem and worthy of public attention. By fostering what planning theorists term ‘communicative rationality’ rather than (or in addition to) ‘technical rationality’ plans based on participation can result in broad-based support for the recommendations developed through the planning process (see Forester, 1989; Innes, 1995; Kaiser et al., 1995).

Our multivariate analysis controlled for a number of other factors that can affect commitment. Among those, political demands by groups to address natural hazards and experiencing catastrophic losses from a disaster have strong impacts on the degree of commitment of elected officials in both Florida and New South Wales. In New South Wales, but not Florida, commitment is also affected by population growth and the demand for land in hazardous areas. Population growth over the previous decade, which was lower on average in New South Wales than in Florida (mean of 22% versus 41%), may have gained sufficient prominence in New South Wales to call attention to growth-related problems that were already of concern in Florida. Demand for development in hazardous areas, which we originally thought would lead to higher commitment, may suppress commitment, if elected officials believe that dealing with hazards will also suppress economic growth and development or anger the owners of land in hazardous areas.

**Addressing the Commitment Conundrum**

The preceding analysis suggests two important steps that higher level governments can take to deal with the commitment conundrum: improve the quality of local plans; and build constituency interest in, and demands for, attention to the objectives sought by planning mandates. These two solutions can be mutually supportive, if in the process of producing higher quality plans local planners take steps to involve citizens and other stakeholders in the planning process.

**Bringing about Higher Quality Plans**

Earlier research has shown that planning mandates help bring about plans where they otherwise would not have been prepared and also plans of higher quality (e.g. see Berke & French, 1994; Berke et al., 1996). But, the quality of local government plans varies considerably across states with mandates and within mandating states as well. Thus, a planning mandate, by itself, is not likely to solve the commitment conundrum.

Advocates of a co-operative approach to planning mandates initially thought that co-operation could overcome the political backlash that can thwart commitment under a coercive mandate such as
Florida's. But, as we saw earlier, commitment is actually somewhat higher in Florida, with its coercive mandate, than in New South Wales, with its co-operative mandate. One reason for that may be due to the failure of a significant percentage of local governments in New South Wales to comply with the mandate and actually prepare plans. In Florida, after the state applied sanctions to five local governments that failed to meet the deadlines for preparing a plan, virtually every locality (98%) subsequently complied, although the quality of the plans prepared varied substantially. In New South Wales, at the time data were collected in 1993 (eight years after the mandate had been promulgated), 38% of the local governments subject to the mandate had not even begun to prepare a plan, and only 37% had a completed plan in hand. Thus, a co-operative approach to mandate design is not a panacea for low commitment and, in fact, may contribute to the commitment conundrum in jurisdictions where planning never gets underway.

We developed regression models to help explain variation in the quality of plans prepared in Florida and New South Wales and to provide guidance about what might be done to help localities prepare better plans. Our findings suggest that an important way to improve the quality of plans is to enhance the capacity of local planning agencies. As shown by the relatively robust regression coefficients in Table 4, in both Florida and New South Wales, plans tend to be of higher quality when the capacity of the planning agency (budget, staff expertise, authority) is also higher.

In both places, state agencies recognize the importance of local capacity to plan and have provided financial and technical assistance. In Florida, we asked local officials to rate the importance of the state’s capacity-building efforts to the quality of the plans they had prepared; 73% rated financial assistance received from the state as important, and a majority also thought state-provided maps that delineated hazardous areas and technical data about hazards were also important in fostering higher quality plans. Reflecting local chafing at state oversight of the planning process, less than a majority of the Florida planners we interviewed thought that feedback they received from state officials during the official state review process improved the quality of their plans. In New South Wales, we did not ask a similar series of questions, but statistical modelling similar to that reported in Table 4 indicates that where regional offices of state agencies administering the 'merits' policy have done more to implement the mandate and deliver technical assistance, staff commitment to prepare good plans is enhanced. Assistance to localities may have more payoff if it is targeted to places that are least likely to prepare good plans. The data summarized by the regression models in Table 4 can provide some help in this regard, since they indicate situational factors that foster good planning or, looked at from another angle, foster poor plans. For example, in New South Wales plans are better in larger jurisdictions and in jurisdictions that have experienced previous natural disasters and have a high degree of demand for land in hazardous areas. These factors stimulate good planning and, where they exist, there may be less need for state oversight and assistance. Instead, state agencies working to foster higher quality local plans might accomplish more if they focus their attention on localities that lack these situational boosts for good planning, i.e. localities that have lower populations and less severe exposure to losses in natural disasters. This is likely to seem counterintuitive to state officials, who tend to focus their efforts on localities with the worst problems, but state officials need to keep in mind that land use plans work best as preventive measures and need to be prepared before, not after, problems have arisen because of improper development (for evidence of this, see Burby & French, 1981).
The desirability of such targeting will, of course, depend on the gap between 'leading' and 'lagging' jurisdictions. If there is a large gap, the desire might be to bring up the lagging group even at the cost of failing to reward those jurisdictions that are already doing a good job. If the gap is smaller, then it may be desirable to encourage those doing a good job to do better and to attend to some of the lagging jurisdictions. Although potential inequities in funding exist, the point is that this approach recognizes the diversity of situations among local governments.

Creating Constituencies

Building constituencies at the local level for state environmental objectives is obviously a daunting task. Nevertheless, we believe there is much that higher level governments can accomplish directly through planning mandates, if they take steps to insist that local governments both involve citizens in the planning process that is mandated and provide information to create awareness of the problems to be addressed in plans. The data we collected in Florida and New South Wales allow us to comment on the efficacy of each approach for building constituency demands.

The efficacy of plans. Central components of the planning mandates in Florida and New South Wales are requirements for citizen participation in preparing the required plans. Florida's growth management legislation and the administrative rules implementing it specifically demand that local governments involve citizens in planning, and that citizens are authorized to challenge plans before the state if those requirements are ignored. In New South Wales, the Environmental Planning and Assessment Act mandates citizen participation in the preparation of environmental plans. The 'merits flood policy' puts formation of a floodplain management committee, that is broadly representative of stakeholders, as the first step in preparing a plan.

In the case of natural hazards, planners can empower citizens to become active in demanding government attention to hazards by identifying areas that are subject to various hazards, informing people about the probability that hazardous events of various magnitudes will occur, and estimating losses that are likely given existing development at risk and various scenarios for future development. In addition, as we noted earlier, when planners involve citizens in finding ways to deal with hazards, they can help in developing consensus about what should be done.

The regression models in Table 5 report the degree of association between planning measures—planning staff capacity and plan quality—and citizen demands for attention to natural hazards. In general, these results provide only slight support for our expectations. Although not statistically significant, the regression coefficient for the effect of plan quality on citizen demands is moderately strong (Beta = 0.29) in Florida. Neither staff capacity nor plan quality seems to be associated with citizen demands in New South Wales. It may be that with the more technical floodplain management planning of the 'merits' policy, there is less success in building a community-based constituency than the growth planning process found in Florida.

The efficacy of information. Information can help to transform an objective problem that is inimical to society's welfare into one that the public perceives as a problem. We suspect it is perceived problems, not the objective ones, that are likely to be critical in mobilizing citizens to demand attention to particular problems. In the case of natural hazards, providing citizens and interest groups with information about
risks and appropriate adjustments is a non-intrusive approach that many believe will help create political constituencies (e.g. see Anderson & Mattingly, 1991).

Information strategies, however, have several possible drawbacks. They can be costly and whether they work to increase public attention to problems is unclear. A comprehensive review of public information campaigns by Weiss & Tscherhart (1994,p. 83) provides the caution that, "[T]he conventional wisdom about public information campaigns... [is] that they are trivial or ineffectual policy instruments". Here, however, we are interested in information which can build public understanding of a policy problem and ways of dealing with it rather than the behavioural change (e.g. turning off lights to save energy) sought by information programmes that have been found to have little impact.

Because information is not value neutral, it can be controversial. For example, an attempt in New South Wales under the prior prescriptive planning regime to make floodplain maps widely available created considerable controversy because landowners thought the information would devalue their property (see Handmer, 1985). When information campaigns are used consciously to manipulate public opinion and manage local political processes, they can be viewed as subverting democratic values. Sometimes the distinction between information and politically inspired propaganda is subtle. If information programmes are used to foster a more informed electorate and wiser decision making by individuals, with enhanced demands for government attention to reducing natural hazards as a secondary benefit, they seem unlikely to run into claims that government officials have overstepped the bounds of propriety.

Information programmes have been employed in both Florida and New South Wales, although in both cases the goal has been to persuade households to take self-protective behaviour rather than to mobilize demands by interest groups. In Florida, information programmes include flood and hurricane hazard maps provided by local governments as part of the National Flood Insurance Program, and regional storm-surge maps provided by regional councils (multi-county planning agencies) and counties as part of emergency preparedness plans (see Deyle & Smith, 1994). The Community Rating System of the National Flood Insurance Program, which provides reduced flood-insurance rates in exchange for community actions to reduce risk, provides an incentive for communities to mount public information campaigns and enact laws that require real estate agents to disclose hazards prior to the sale or rental of property. In New South Wales, information campaigns include distribution of flood-awareness brochures to households, media liaison, detailed technical reports and distribution of information about flood-warning systems. On a seven-point scale of effort devoted to awareness-building, the average local government in Florida scores at the mid-point (mean score of 4.04). In New South Wales, governments on average devote less effort to awareness-building activities (mean score of 3.02) than in Florida (p < 0.01 for two-tailed t-test of differences).

In both Florida and New South Wales, constituency demands are twice as high in localities that expend a high degree of effort on information programmes compared to those that expend little effort on these activities. The relationship remains strong when a variety of other factors that can stimulate political action are controlled statistically (see the regression models reported in Table 5). Table 5 also shows that effects of information on constituency demands are greater in Florida, which expends more effort on awareness building, than in New South Wales.
Conclusions

In this paper, we have explored what we term the ‘commitment conundrum’ that arises when local governments are indifferent to assigned roles in environmental planning and management. This indifference is evident for local governments in our study for which a sizable percentage of elected officials had little or no interest in hazard mitigation—the aspect of environmental management we examined. That is a serious problem since commitment is an important consideration in placing environmental problems on local political agendas, and in providing the impetus for vigorously pursuing implementation once relevant policies are identified.

The commitment of elected officials to the goals of the mandates we studied tended to be lower when plans had not been prepared or were of low quality, when various interest groups made few demands for governmental action, and when risks had not become self-evident through the occurrence of a natural disaster. These findings led us to conclude that two strategies have promise if higher level governments are to solve the commitment conundrum. One strategy is based on improving the quality of plans, for which our data suggest financial, technical and other forms of capacity building will be effective. The second is to create constituencies for the solution of environmental problems, for which our data suggest that both better plans and more public information about the problems will be effective.

Our basis for drawing these conclusions is necessarily limited for two reasons. First, we have only considered the experience in addressing natural hazards. Other environmental issues may present different challenges in deciding how best to address them, but we suspect that, no matter what the issue, there will be similar variation in the commitment of local officials to address the problem. Second, we have only considered the experience with the programmes found in Florida and in New South Wales. Although these may not be typical of environmental planning programmes, it is striking to note the similarity in results for these different settings. This increases our confidence that our findings are not unique to a particular programme or setting.

Although much remains to be learned about how to foster local commitment to environmental goals, our analyses based on data from Florida and New South Wales have shown that there are steps higher level governments can take that can lead to improved commitment. When the commitment of local governments to higher-level policy objectives is likely to be weak because of inadequate appreciation of the policy problem, information programmes and participative planning provide useful tools for building the commitment of local officials. This is a critical ingredient if local governments are to become willing partners in pursuing state and national environmental policy goals. Thus, informational approaches and planning processes are desirable ingredients for intergovernmental mandates. They can build the basis of understanding and support needed to engender commitment to policy goals.

Acknowledgements

Collection of data in New South Wales was supported by National Science Foundation grant BCS-9208082 to the University of Washington. We are grateful to John Handmer and D. Ingle Smith of the Australian National University, who formulated and conducted the survey of local officials in New South Wales. Collection of data in Florida was supported by National Science Foundation grant BCS-8922346 to the University of North Carolina at Chapel Hill, and involved collaboration of the
authors and John DeGrove of Florida Atlantic University/Florida International University. The contents of this paper are not necessarily endorsed by the National Science Foundation or the participating universities.

Notes

(n1.) 

me choice of the Florida and New South Wales planning mandates as cases for study deserves some explanation. We selected the two cases based on three considerations. First, the study design was feasible; we had data on hand for Florida (see Burby & May et al., 1997), and colleagues in New South Wales who were interested in collaborating in a comparative study. Second, as explained in the text, each mandate provides an exemplar of key features that define the coercive and co-operative approaches to dealing with local governments. Third, each mandate was adopted at about the same time (1984/1985 in Florida and 1984 in New South Wales) and sufficient time had elapsed to gauge the commitment of local elected officials to the policy goals espoused by the mandates.

(n2.) 

The policy is referred to by different names among state government documents: "Floodplain Management Policy," "Flood Policy" and "Merits Flood Policy." For background about the evolution of the merits approach, see Handmer (1985).

(n3.) 

Data collection in Florida was conducted by the staff of the Center for Environmental and Urban Problems, Florida Atlantic University/Florida International University (see Burby & May et al., 1997). The sample was drawn from cities and counties with 1990 estimated populations greater than 2500. Responses were obtained from each of the 30 jurisdictions in the sample.

(n4.) 

This survey was conducted by the Centre for Resource and Environmental Studies, Australian National University (see May et al., 1996). Responses were obtained from 127 of 155 local councils that state officials identified as having a potential flood problem, for a response rate of 82%.

(n5.) 

For more information about the International Decade, see Advisory Commission on Engineering and Technical Systems, National Research Council (1987).

(n6.) 

The range of plan-quality scores in Florida is from 1.3 to 11; the median is 4.8. A systematic assessment of the hazard-mitigation sections of the Florida plans by Deyle & Smith (1994, p. 196) is quite critical of the overall quality of these plans. According to these authors' "many local plans do not meet the intent of the state's planning mandates. No single community was found to meet all of the . . . requirements, and in many instances the requirements were met only with broad and general statements referencing the intent to consider a policy at some future date."

(n7.) 

In the case of Florida, because the regression coefficient is not statistically significant (in part because of the low number of cases), this association has to be viewed with some caution.

Table 1. Variables and their measurement

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<th>Variables</th>
<th>Measurement</th>
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<td>Commitment of elected officials</td>
<td>Respondent rating of the commitment of elected officials to hazard (or</td>
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environmental) management programmes (scaled 1 = poor to 5 (Florida); 7 (New South Wales) = excellent). Higher scores indicate greater perceived commitment.

Constituency demands

Index measuring extent of different constituency activities within the local government addressing hazard problems. The relevant groups are: local business; environmental; neighbourhood and individuals not associated with any particular group. For each group an index was created based on whether or not each of four possible actions had been taken (1 = yes, 0 = no): asked for information; became active in asking for community action; attended meetings; and/or served on relevant committees addressing the problem. The overall index of constituency demands is the sum of the scores for the four groups for a possible total score of 16. Higher scores indicate greater constituency demand to address hazard-related problems.

Demand for development in hazardous areas

Index based on the respondent rating of the demand for development in hazard-prone areas (scaled 1 = none to 5 = extensive).

Plan quality

Index of the quality of local plans in Florida and the stage of the planning process in New South Wales. In Florida, using a common coding form, each local plan was coded for the presence or absence of a series of potential hazard-management related facts, goals and policies (see Berke et al., 1996). Scores were collapsed for comparability.
to New South Wales into a scale of 1 (low) to 3 (high) by assigning a score of 1 to the lowest third of plan quality scores; 2 to the next third of scores, and 3 to the highest third of scores. In New South Wales, localities were given a score of 1 if they had not begun the planning process, 2 if they had conducted a flood study or floodplain management study, and 3 if they had adopted a completed plan.

Planning staff capacity

Index of governmental planning capacity based on mean of respondent rating of three items: adequacy of budget; technical expertise; and authority to enforce rules (New South Wales) regulations (Florida).

Population

Population data from 1991 censuses (New South Wales), 1990 census (Florida). The natural log was used to deal with skewness in the data.

Population growth


Previous natural disasters

Respondent rating of the impact of a disaster occurring within the past 20 years. Catastrophic events are considered those rated as having an "enormous impact--devastation was widespread and severe" or a "large impact--devastation was widespread and moderate".

Public information effort

Respondent rating of the degree of effort the local government is putting into increasing people's awareness of hazards (scale 1 = low to 7 = high). Higher scores indicate greater efforts.

Table 2. Commitment of elected officials in Florida and New South Wales (%)
Legend for Table:

A - Under coercive mandate:
Florida local governments

B - Under co-operative mandate:
New South Wales local governments

<table>
<thead>
<tr>
<th>Degree of commitment to hazard mitigation</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>27</td>
<td>39</td>
</tr>
<tr>
<td>Moderate</td>
<td>30</td>
<td>17</td>
</tr>
<tr>
<td>High</td>
<td>43</td>
<td>44</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Number of cases 30 115

Notes: Chi-square: 7.9 with 4 degrees of freedom. p = 0.094.

[a] Ratings by local planning director (or similar official if no planning director) of the degree of (New South Wales). Scores of 1 and 2 (Florida) and 1, 2 and 3 (New South Wales) are below the mid-points of the scales and are assumed to represent a 'low' degree of commitment. Scores of 3 (Florida) and 4 (New South Wales) are at the mid-points of the scales and are assumed to represent a 'moderate' degree of commitment. Scores of 4 and 5 (Florida) and 5, 6 and 7 (New South Wales) are above the mid-points of the scales and are assumed to represent a 'high' degree of commitment.

Table 3. Examining variation in commitment

<table>
<thead>
<tr>
<th>Explanatory variables</th>
<th>Florida</th>
<th>New South Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of plan</td>
<td>0.30[*]</td>
<td>0.29</td>
</tr>
</tbody>
</table>

Controls

<table>
<thead>
<tr>
<th>Previous natural disasters</th>
<th>Florida</th>
<th>New South Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.28[*]</td>
<td>0.20[**]</td>
</tr>
</tbody>
</table>

Regression models explaining variation in commitment among elected officials[a]

hazardous areas in community    0.02   -0.15[*]

Constituency demands for attention to natural hazards    0.30[*]   0.23[**]

Population of jurisdiction    -0.09   -0.08

Population growth over past decade    0.05   0.15[*]

Number of cases    30   112

Adjusted R²    0.14   0.16[***]

F-value    1.80   4.56

Notes:

[*] p < 0.10  [**] p < 0.05  [***] p < 0.01: one-tailed test.

[a] Dependent variable is commitment of elected officials to hazard mitigation (see note a to Table 2). Cell entries are standardized regression coefficients from OLS modelling. Explanatory measures are defined in Table 1.

Table 4. Factors associated with variation in the quality of local plans

<table>
<thead>
<tr>
<th>Explanatory variables</th>
<th>Florida</th>
<th>New South Wales</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning staff capacity</td>
<td>0.25</td>
<td>0.21[***]</td>
</tr>
<tr>
<td>Previous natural disasters</td>
<td>-0.19</td>
<td>0.17[***]</td>
</tr>
<tr>
<td>Demand for development in hazardous areas in community</td>
<td>0.32[*]</td>
<td>0.20[**]</td>
</tr>
<tr>
<td>Population of jurisdiction</td>
<td>0.11</td>
<td>0.22[**]</td>
</tr>
<tr>
<td>Population growth over past decade</td>
<td>0.17</td>
<td>-0.01</td>
</tr>
<tr>
<td>Explanatory variables</td>
<td>Florida</td>
<td>New South Wales</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>-----------</td>
<td>----------------</td>
</tr>
<tr>
<td>Planning staff capacity</td>
<td>-0.11</td>
<td>-0.06</td>
</tr>
<tr>
<td>Quality of plan</td>
<td>0.29</td>
<td>-0.01</td>
</tr>
<tr>
<td>Public information effort</td>
<td>0.61[**]</td>
<td>0.20[**]</td>
</tr>
<tr>
<td>Previous natural disasters</td>
<td>0.28[*]</td>
<td>0.05</td>
</tr>
<tr>
<td>Demand for development in hazardous areas in community</td>
<td>0.25[*]</td>
<td>0.15[*]</td>
</tr>
<tr>
<td>Population of jurisdiction</td>
<td>-0.03</td>
<td>0.43[***]</td>
</tr>
<tr>
<td>Population growth over past decade</td>
<td>0.07</td>
<td>-0.07</td>
</tr>
</tbody>
</table>

Notes:

[*] p < 0.10  [**]p < 0.05  [***]p < 0.01: one-tailed test.
Notes:

[*] p < 0.10  [**]p < 0.05  [***]p < 0.01: one-tailed test.

[a] Dependent variable is constituency demand score (see Table 1 for scoring). Cell entries are standardized regression coefficients from OLS modelling. Explanatory measures are defined in Table 1.

References


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