

## **Evaluating Land Use Plan Quality**

Paper prepared for *Conference on the Science and Education of Land Use*,  
September 24-26, 2007, Washington, D.C.

Dr. Philip Berke, Professor\*  
Dr. David Godschalk, Professor Emeritus\*

\*Department of City and Regional Planning  
New East Building CB# 3140  
University of North Carolina  
Chapel Hill, NC 27599-3140

\*\*Institute for the Environment  
University of North Carolina

### **Abstract**

Hundreds of land use plans are made every year, but they are rarely evaluated against best practice standards. Despite the centrality of land use plan making to the profession of city and regional planning, there is a gap in our knowledge about the quality of the plans produced. This paper discusses plan quality evaluation, a proven methodology for assessing the quality of plans. It reviews the *evolution* of the concept, the *dimensions* covered, and the *principles and criteria* used. It provides a comparative analysis of the *findings* from published plan quality evaluations, ranging from research studies in the United States to national planning policy applications in New Zealand, and offers recommendations about *future directions* in plan quality evaluation.

### **Keywords**

Land use plan evaluation concepts  
Plan evaluation methodology  
Plan quality principles and criteria  
Meta-analysis of plan quality research  
Future directions in plan evaluation

### **Authors**

Berke and Godschalk are colleagues in the Department of City and Regional Planning at the University of North Carolina at Chapel Hill. They are co-authors of work on plan quality evaluation included in two books: *Urban Land Use Planning* (University of Illinois Press, fifth edition, 2006) and *Natural Hazard Mitigation* (Island Press, 1999), and have individually published journal articles and reports on the topic.

## **Evaluating Land Use Plan Quality**

### **Introduction**

Land use plans play a pivotal role in guiding and regulating urban development (Meck 2002). In the U.S., land use elements are required in local comprehensive plans prepared in those states with smart growth laws and are typically relied upon across the country as the foundation of local development management decision-making. A 1994 survey of twelve growth managing states in the U.S. found 2742 local comprehensive plans had been prepared by cities and towns, counties, and regions in those states (Kaiser and Godschalk 1995). As Kaiser and Godschalk (1995, p. 365) say about land use plans: “Not only do such plans help decision makers to manage urban growth and change, they also provide a platform for the formation of community consensus about land use issues, now among the most controversial items on local government agendas.”

Given their widespread usage and significance, it is surprising that plans are rarely evaluated against best practice standards. Despite the centrality of land use plan making to the profession of city and regional planning, there is a gap in our knowledge about the quality of the plans produced. This is partly due to the complexity and future-oriented nature of the plans, which bring together factors, issues, and aspirations from a number of sources to focus on a long-range outcome. The evaluation gap also is due to the uniqueness of individual plans, which are designed to suit the needs and objectives of particular localities, and to the range of legal foundations for land use planning, from constitutional issues to mandatory and permissive state statutes. Finally, the lack of evaluation may be due to the perception that plans are in large part works of art—designs that defy rational analysis.

The gap in knowledge about plan quality is also due to the lack of systematic integration of results from prior studies that reveal patterns in the quality of plans. The traditional literature review approach that emphasizes a narrative discussion often leads to several shortcomings: 1) selective inclusion of studies often based on the reviewers own impressionistic view of the quality of a study; 2) subjective weighting of studies in the interpretation of findings; and 3) misleading interpretation of study findings (Wolf 1986). The consequence is a failure to integrate results from existing studies that impedes progress-cumulating knowledge, and generates highly uncertain and inaccurate answers to guide planning practice.

This paper discusses an emerging effort to design and apply a systematic approach for evaluating plan quality. We review the evolution of the plan quality concept, the dimensions covered in plan quality evaluation, and the principles and criteria used by plan quality evaluators. We provide a meta-analysis that permits systematic review and synthesis of published plan quality evaluations, and we offer recommendations about future directions in applications of plan quality evaluation.

We argue that plan quality evaluation is not only necessary, but is also feasible and is quietly developing into a proven methodology. This systematic evaluation methodology has been applied in a number of cases, ranging from research studies in the United States

to national planning policy requirements in New Zealand. Many plan content areas have been evaluated, including natural hazard mitigation, growth management, coastal management, environmental protection, ecological systems, mandated state planning, sustainable development, plan implementation, and human rights. We conduct a meta-analysis of a collection of analysis results from 15 individual published evaluations of plan quality for the purposes of integrating the evaluation criteria used, comparing findings, and drawing conclusions to guide practice and future research.

We show how the plan quality evaluation concept has evolved, as it has progressed from basic to more advanced applications and has drawn on ideas from various disciplines. The approach involves analyzing the dimensions of plans, including their fact bases, goals, and policies, as well as their provisions for participation, coordination, and implementation. It applies evaluation principles and criteria, including both internal plan quality (issues and vision statement, fact base, goals and policy framework, plan proposals), and external plan quality (recognition of opportunities for use, creation of clear understanding, accounting for interdependent actions, and revealing participation of formal and informal actors and institutions).

We discuss where plan quality evaluation may be headed in the future. We expect to see applications to related land policy domains, including equity, environmental quality, transportation, sustainability, and others. The future also should see important methodological advances, including simulation models, GIS scenarios, and statistical evaluation techniques. One possible future development is that some jurisdictions may begin to *require* that planners conduct both internal and external plan quality evaluations as part of the overall plan preparation and review processes.

### **Why Assess Plan Quality?**

In a performance oriented society, people expect to be able to judge how well plans achieve their objectives and how well planning processes have been conducted. We can look back at the outcomes of historic plans, such as the famous Daniel Burnham 1909 plan for Chicago that defined the City Beautiful Movement in the U.S. and proposed the city's distinctive lakefront parks and roadways, the Magnificent Mile, and the Navy Pier (Smith 2006) or the Robert Moses plans that shaped the New York system of freeways, bridges, and parks (Caro 1974; Ballon and Jackson 2007)). With the advantage of decades of hindsight we can form opinions about how effective these plans were in achieving their objectives. We can also evaluate the planning processes that were carried out in these cases, both of which took place well before the participatory era of urban planning.<sup>1</sup>

It is more difficult to evaluate the outcomes of contemporary plans, whose effects will be realized in a future time when conditions have changed and different standards of evaluation may have been formulated. However, we can evaluate the plans themselves according to contemporary standards of good practice. Such evaluations also enable us to judge the quality of plan-making, both to review the effectiveness of past processes and to guide future processes. Plan quality evaluation thus functions as a *learning process* that yields important planning lessons and guidelines.

If we do not evaluate our plans and planning processes, we miss a valuable opportunity to learn how to improve them. For example, evaluation of plans prepared under a statewide affordable housing mandate in Illinois showed that while most of the plans met the minimum legal requirements (procedural compliance), their content included widespread skepticism about the need for, and resistance to, the local actions necessary to implement this unfunded mandate (Hoch 2007).<sup>2</sup> The author concludes that it may be difficult to meet the goals of the unpopular mandate without additional incentives to turn the paper goals into practice commitments.

The essence of a profession, such as city and regional planning, is its capacity to set and enforce high standards of practice. Good practitioners learn from reflecting on their experience and on the quality of their work (Schon 1983); their reflection is assisted by professional norms of good practice. Over time, this professional learning shapes criteria for best practices in land use planning, as well as other areas of planning. Findings and lessons from best practices in plan quality evaluation, while not extensive, are available in the published literature.<sup>3</sup>

### **Reaching the Full Power of Planning**

Land use plans serve a number of public purposes, including developing sustainable communities that balance social, environmental, and economic values (Berke, Godschalk, and Kaiser 2006). Besides their major purpose of guiding future land use into desirable configurations, land use plans assist communities in addressing opportunities and threats, and choosing among policy alternatives. In the process, they educate stakeholders about issues and options and help them to build consensus about community visions, mediating conflicts between stability and change. They become repositories of data and information and describe linkages among social, environmental, and economic conditions. Through their participatory processes, they educate future community leaders and create community networks for resilient responses to stresses, such as disasters. During their periodic updates, they offer opportunities to assess progress toward community goals, as well as changes in important conditions.

Adopted plans have wide ranging power to influence environmental justice, quality of life, economic opportunity, disaster resistance, transportation efficiency, infrastructure costs, and many other important aspects of community life (see, for example, Berke, Godschalk, and Kaiser 2006; Bullard 2007; Burby and Dalton 1994; Burby et al. 1999, Knaap, Ding, and Hopkins 2001; Meck 2002). These powerful instruments allow and encourage democratic determination of visions and instruments for incorporating stakeholder values and goals into future urban and regional growth patterns. If they are to achieve their full potential, our plans should reflect the highest quality of thought and practice that we are capable of. Only systematic evaluation enables us to identify their specific strengths and weaknesses, to judge whether their overall quality is good, and to provide a basis for ensuring that they reach a desirable standard.

### **A Systematic Approach to Plan Quality Evaluation**

Baer (1997) has comprehensively evaluated the plan evaluation literature, trying to answer the question of how you would know a good plan if you saw one. He tackles both modernist and post-modernist issues, reviews published criteria, and proposes a vocabulary for plan evaluation.<sup>4</sup> He notes that the type of evaluation will depend upon the type of plan under consideration, which can include plans as visions, blueprints, land use guides, remedies to existing problems, responses to administrative requirements or mandates, process-oriented activities (such as public participation), and pragmatic actions aimed at improving legal or statutory procedural frameworks.

Baer (1997) suggests a set of general criteria for plan assessment, to be used during plan-making. His framework, drawn from the literature, is organized around the following categories:

- Adequacy of content (political context, administrative authority, role of preparer, background information, client, purpose, funding, etc.)
- “Rational Model” considerations (assessment criteria, problem identification, goals and objectives, tone, coordination with other agencies, regional context, alternatives considered, etc.)
- Procedural validity (groups involved in plan formulation, data and models used, transformation of technical matters into policy, public comment, etc.)
- Adequacy of scope (consideration of relevant issues, efficiency and equity issues, cost-benefit distribution, financial/fiscal implications, legal implications, political feasibility, etc.)
- Guidance for implementation (appropriate provisions, priorities, costs, time span, scheduling and coordination, impact analysis, responsible agency, etc.)
- Approach, data, and methodology (technical bases, wide data spectrum, flexibility in adding data, data and methodology sources cited, etc.)
- Quality of communication (client/public identified, convincing presentation, rationales for decisions given, proposals consistent with objectives, etc.)
- Plan format (size and format conducive to use, date of publication, authors listed, table of contents, graphic, etc.)

Other studies have employed additional criteria for plan evaluation. Kaiser, Godschalk, and Chapin (1995) and Kaiser and Davies (1999) focus on the conceptual dimensions of plans themselves that define their quality, including their goals, policies, and fact bases. Hopkins (2001) suggests including the external validity of plans, addressing their relevance in fitting the needs of local situations. Talen (1996) proposes methods for evaluating the implementation success of plans.

Land use plans have particular characteristics that distinguish them from verbal policy plans or one-of-a-kind plans responding to state or federal mandates. First, they are inherently *spatial* plans, dealing with the patterns and distributions of activities in space and place. Thus they must rely on maps and drawings that delineate spatial relationships among activities, facilities, and structures occupying particular locations on the land, as in Greenprints, Habitat Conservation Plans, hazard mitigation plans, and transportation plans. Second, they are the basis for *regulatory* actions, such as zoning or subdivision approval. Thus, they must rely upon legal and constitutional authorities to regulate land

use in a defensible fashion. Third, they require democratic *participation* in their construction and approval processes. Thus, they must be open to widespread community involvement. Fourth, they are *goal-oriented*, aimed at achieving a future land use pattern based on community values, needs, and desires. Thus, they must include a vision of the desired future. Fifth, they are premised on *implementation*, in the expectation that they will influence land use decisions by both public and private sector actors. Thus, they must include programs for guiding actions and investments in supporting infrastructure. Finally, they are *comprehensive*, in the sense that their outcomes depend upon a wide variety of actions by many players, rather than a single governmental body. Thus, they must be clear, understandable, and convincing to many audiences.

For land use plans, we propose a refined approach to plan quality evaluation that recognizes their essential nature (Berke, Godschalk, and Kaiser 2006, pp. 69-82). In our view, a “high-quality plan provides a clear and convincing picture of the future, which strengthens the plan’s influence in the land planning arena (p. 69).” We believe that two important conceptual dimensions should be included in plan quality evaluation: 1) *internal plan quality*, including, for example, the content and format of key components (issues and vision statement, fact base, goal and policy framework, plan proposals), and 2) *external plan quality*, including, for example, the relevance of the scope and coverage of the plan in involving stakeholders and fitting the local situation.<sup>5</sup>

### **Application of Meta-analysis to Determine Values for Land Use Plan Quality**

While there are a few summaries of findings from plan quality evaluations (Baer 1997 and Godschalk, Kaiser and Berke 1998), none have employed the formal tools of meta-analysis (Wolf 1986, and see Kalkhoff and Thye 2006 for an exemplar study). Meta-analysis is a procedure that allows researchers to systematically analyze previous individual analyses to determine the consistency of empirical findings within a given research program. It offers an alternative to the traditional narrative discussions of research studies. The procedure consists of two main components: selection of studies and computation of land use plan quality values.

#### *Selection of Studies*

We used EBSCOhost (2006) data bases on Academic Search Premier and Government Collections, and the peer reviewed journals indexed in the bibliographic listings of the *Journal of Planning Literature* between 1995 and 2007 to identify prospective studies for our meta-analysis. We then applied four inclusion criteria in our listing to produce the studies used in our analysis. Specifically, we included studies that 1) presented the mean or proportional score of any findings in plan quality; 2) reported the number of plans that were evaluated; 3) only included studies published in peer-reviewed journals and books, and 4) selected one publication when multiple publications were based on the same plan quality data set. Application of these criteria to our list of prospective studies resulted in a final set of 15 plan evaluation studies that we use to examine plan quality.

Table 1 shows findings from our 15 selected studies that indicate the range of plan quality characteristics and examples of specific criteria grouped under each characteristic. As noted, we categorized the characteristics under the internal and external conceptual dimensions of plan quality (Berke, Godschalk, and Kaiser 2006. pp. 69-82). We identified seven internal characteristics: issue identification and vision, fact base, goals, policies, internal consistency, implementation, and monitoring and evaluation, and three external characteristics: organization and presentation, inter-organizational coordination, and compliance.

Table 1 here

The characteristics and associated criteria are designed to guide an evaluation of existing plans, and the preparation of a new plan or update of an existing one. Practitioners can use them as a checklist of possible considerations during plan preparation, and to stimulate plan authors (planners and the public) to devise variations that are pertinent to local contexts and have continuity among diverse viewpoints (Hoch 2002). Researchers can use them for empirical studies that use multi-variate statistical models to determine the causes of plan quality (e.g., state planning mandates, local commitment and capacity), and effects of plan quality on various outcomes (e.g., traffic congestion, community vulnerability to hazards, affordable housing).

Table 2 indicates that the selected studies cover a range of topics, research designs, settings and samples. Natural hazard mitigation within land use plans is the most frequent topic (7 of the 15 studies), with the remaining studies covering a diversity of topics, including smart growth, sustainable development, watershed protection, housing affordability, landscape ecosystems, coastal resources, and human rights of indigenous people. The plan evaluation method has been applied to groups of plans in domestic and international settings, with 11 studies based solely in the U.S., three studies in New Zealand, one in Holland, and one that included New Zealand and U.S. plans (Berke et al. 1997).

Table 2 here

Three types of research designs have been employed.<sup>6</sup> Cross sectional samples of plans were used by two-thirds of the studies (10 out of 15). These studies yield results of scores for various plan quality indexes for a national sample of state mitigation plans in the U.S., a national sample of regional plans in Holland, and state-level samples of local plans in Florida, California, Illinois, and North Carolina, and New Zealand.

A criticism of the cross sectional approach is that researchers have no control of selecting key factors (i.e., independent variables) that may affect plan quality scores. Some studies have introduced a comparative research design where investigators selected a group of plans where a key factor is present and then selected another group of plans where the factor is not present or is altered in some way. Burby and May (1997) employed such an approach in a comparative study of 90 local plans in three states with mandates and 90 local plans in three states without mandates. Berke and Manta-Conroy (2000) compared

a sample of plans that integrated the concept of sustainable development with a sample that did not integrate this concept. Finally, Berke et al. (1999) compared two samples of plans based on two types of planning initiatives (i.e., whether plan authors were at the regional or local level).

The main shortcoming of the comparative approach is that only differences between the groups subject to an intervention (e.g., state mandated local plans) compared to the control group (e.g., non-mandated local plans) are taken as evidence of the impact. However, there may be considerable differences between each group at the start of the intervention, and the change resulting from the intervention may not be accurately detected given differences at the outset. A superior research design was employed by Brody (2003) that combines the comparative and time series approaches. Here a more accurate distinction can be estimated by considering both pre- and post-intervention information in both targeted and control groups of plans. Brody compared differences in the absolute change between one group of plans before and after a state mandate intervention with the absolute change in a control group during the same time period.

#### *Computation of Empirical Values for Land Use Plan Quality*

Plan quality evaluation methodology is based on content analysis of plan documents. Plans should be read by two readers to minimize bias, and then coded to reflect the degree to which quality is attained. Plan content is coded in terms of a basic binary scale (1 indicates an item is present; and 0 indicates not present), or an ordinal scale (e.g., 2 if the quality is fully realized in the plan, 1 if the quality is present but not fully realized, and 0 if the quality is not present). Then the numerical scores for each characteristic are summed. Thus a characteristic, such as a goal and policy framework, with four itemized criteria would have a maximum score of 8. The total score for a plan would be the sum of scores for all characteristics. In some studies these scores are reported as proportionate scores in which the scores generated by content analysis are divided by the total possible score which range from a low of 0 to a high of 1.

However, it is not possible to directly use values from each study because of study differences in how the characteristics are measured (e.g., scales and number of items for each criterion vary) and how plan quality scores were computed. This requires that the statistics of interest (e.g., means and standard deviations) be transformed into standardized scores to make scores comparable across plan quality characteristics. In studies that reported standardized proportionate scores we could directly use the findings (e.g., Berke et al, 1996, Brody 2003).<sup>7</sup> In other studies, we transformed scores by plan quality characteristic by first identifying the maximum possible score of characteristics for each study and then dividing the reported score of each characteristic by the total maximum score to determine a proportionate score (e.g., Burby and May 1997, Nelson and French 2002).

Mean scores for plan quality characteristics from our meta-analytic transformations were computed for each internal dimension and external dimension characteristic. The overall means of characteristics across studies were weighted based on sample size used in each



study (see table 1 for sample sizes). The main methodological limitation is the small number of scores for several of the characteristics. Hence, statistical significance tests for mean values to compare overall scores across plan quality characteristics are not particularly useful. Thus, our interpretation of findings is based on overall patterns rather than on statistical results. These data limitations reveal the exploratory orientation of the comparisons that follow.

## Findings

Mean scores for plan quality characteristics and overall weighted means (with standard deviations) are presented in table 3 for internal dimension characteristics. Several findings emerge from the analysis of the internal dimension of plan quality. First, internal consistency received the highest overall mean score (.63) among all internal characteristics. Plan authors are clearly and reliably linking issues, goals, policies, implementation actions, and monitoring indicators. Second, the fact base, goals, and policy characteristics of plans scored lowest among all characteristics under the internal dimension (facts = .23, goals = .28, and policy = .25). This finding is troublesome since these characteristics serve the critical direction setting function of plans. Goals identify what the community wants to become, policies guide decisions to achieve the desired future spatial form, transportation system, and open space networks, and facts provide the data bases to ensure decision making in setting goals and policies are well-informed.

Table 3 here

Settings did make a difference. In contrast to the overall pattern of findings on facts, goals and policies, Norton's (2005) study of 40 local coastal plans in North Carolina found that these characteristics were strong (facts = .65, goals = .62, and policies = .69). Coastal communities must produce high quality plans to contend with the dual pressures of guiding intense economic growth while protecting fragile natural ecological ecosystems to produce high quality plans. Also, North Carolina coastal plans are mandated by the state. Compared to non-mandated plans, mandated plans produce higher quality (Burby and May 1997). Similarly, Termorshuizen, Opdam, and van den Brink's (2007) study of 38 landscape ecological plans in Holland scored highest (.87) for the policy characteristic among all studies. The Dutch pay careful attention to landscape ecological sustainability and mandate landscape-scale planning, in response to the country's limited land resource base, and pressure to accommodate growth and outward urban expansion. Other studies focused on problems like natural hazard mitigation (e.g., Burby and May 1997), ecosystem management (e.g., Brody et al 2003), affordable housing (e.g., Hoch 2007), and redress of treaty violations against land rights of indigenous people (e.g., Berke et al. 2002) found that these issues are typically low on local agendas. Relative to the North Carolina coast and Dutch studies, plan authors face less pressure and support in these settings to give attention in plans.

A third finding on the internal dimension of plans is that the overall mean scores are moderate for identification of issues (.48), implementation (.44), and monitoring and evaluation (.38). If issues are not clearly articulated in plans than the remaining plan

elements are less likely to address the needs of the community. If plans score high on all elements except implementation, and monitoring and evaluation, then plans may become paper documents that are not carried out, assessed and improved. Findings from two studies shed light on how plan quality could be improved. Berke et al.'s (1999) examination of 16 regional plans in New Zealand had a high score in issue identification (.61) because regional government planners initiated public engagement process in the early stages of plan preparation and were thus in a stronger position to identify issues. Consistent with the reasons for high fact, goal, and policy scores received by North Carolina coastal plans (Norton 2005), scores for implementation (.67), and monitoring and evaluation (.58) for these plans are high.

Table 4 shows the results of the analyses of the external dimension characteristics. Several findings emerge from studies of the external dimension of plan quality. First, the compliance characteristic received the highest overall mean score (.63) among the three external characteristics. While this finding reveals that planners and their communities are writing plans that comply with the "letter-of-the-law," the remaining plan quality characteristics must also be strong to achieve and go beyond the minimum thresholds of planning mandates. Plans received a moderate overall mean score for organizational presentation coordination (.46). Notably, the Termorshuizen, Opdam, and van den Brink's (2007) study of Dutch plans scored high (.74) in coordination. This was due to Dutch law that requires strong vertical consistency for coordination among national, regional, and local government plans, and horizontal consistency requirements among local governments at the regional landscape scale. Finally, organizational and presentation score was moderate (.44). Because these scores were derived from only one study of regional and local plans in New Zealand (Berke et al. 1999), we are not able to derive insights about how this characteristic can be improved (or degraded) based on comparisons with other studies.

Table 4 here

### **Conclusions and Recommendations**

Plan quality evaluation is emerging as a valuable tool for systematic analysis of the goodness of plans. The methodology offers an objective and straightforward tool for studying plan quality and guiding plan preparation. It has been applied by university researchers in a variety of settings in the U.S. and abroad to a number of plan components, including those dealing with natural hazards, sustainable development, human rights, ecosystems, watersheds, coastal area management, and housing affordability.

A meta-analysis of 15 published plan quality evaluations reveals patterns of plan strength and weakness. While these qualities tended to vary with the plan element topic and setting, we found some clear patterns. In terms of *internal* plan dimensions, consistency scored the highest, while fact base scored lowest. It is heartening to learn that plan authors are preparing consistent documents, given the complexity of linking issues, goals, policies, implementation actions, and monitoring indicators within the plans. However, it is disappointing to learn that the planners are not providing stronger fact bases some since

these data undergird the proposals of the plans. Evaluation of plan goals and policies also showed weaknesses. *External* dimension of plan quality tended to fare better. Compliance characteristic received the highest overall mean score among the three external characteristics. Coordination and organization and presentation received moderate overall scores.

Where is plan quality evaluation likely to head in the future? We expect to see a broadening scope of applications related to land policy, including equity, environmental quality, transportation, sustainability, smart growth, and others. The capacity of plan quality evaluation to highlight plan strengths and weaknesses should prove especially valuable in the analysis of the impacts of controversial or innovative land use policies in a variety of fields.

We also expect to see important methodological advances in the future, as the plan quality approach is refined and linked to simulation models, GIS scenarios, and various goal-oriented techniques. The quantitative evaluation of plan quality relative to proposed visions, goals, and policies could open a new field of land use research.

It is also possible that some jurisdictions may begin to *require* that planners conduct both internal and external plan quality evaluations as part of the overall plan preparation and review processes. For example, states with smart growth requirements may come to see that the standard checklist approach to plan compliance with state guidelines is inadequate to address the full intent of smart growth standards. These states may ask not just about the presence of a policy in a plan but also whether the policy is well integrated with the goals, facts, and issues of expressed in the plan.

The bottom line is that we believe that plan quality evaluation is likely to be increasingly prominent in both research and practice. The approach can provide invaluable insights into plan performance and can open new vistas for understanding how to prepare better plans. Such a powerful tool deserves widespread usage.

## References

- Baer, W.C.** (1997) General plan evaluation criteria: An approach to making better plans. *Journal of the American Planning Association*, 63:3, 329-345.
- Ballon, H.**, and K.T. Jackson (eds.) (2007) *Robert Moses and the modern city: The transformation of New York*. New York: Norton.
- Berke, P.**, D. Roenigk, E. Kaiser, and R. Burby (1996) Enhancing plan quality: Evaluating the role of state planning mandates for natural hazard mitigation, *Journal of Environmental Planning and Management* 39 (1): 79-96.
- Berke, P.**, J. Dixon, and N. Ericksen (1997) Coercive and cooperative intergovernmental mandates: A comparative analysis of Florida and New Zealand environmental plans, *Environment and Planning B: Planning and Design* 24: 451-468.

**Berke, P.,** J. Crawford, J. Dixon, and N. Ericksen (1999) Do cooperative environmental planning mandates produce good plans? Empirical results from the New Zealand experience. *Environment and Planning B: Planning and Design* 26: 643-664.

**Berke, P.,** M. Manta-Conroy (2000) Are we planning for sustainable development? An evaluation of 30 comprehensive plans, *Journal of the American Planning Association* 66 (1): 21-33.

**Berke, P.,** N. Ericksen, J. Crawford, and J. Dixon (2002) Planning for indigenous people: Human rights and environmental protection in New Zealand, *Journal of Planning Education and Research* 22: 115-134.

**Berke, P.R.,** D.R. Godschalk, and E.J. Kaiser, with D.A. Rodriguez (2006) *Urban land use planning*. Fifth edition. Urbana, IL: University of Illinois Press.

**Brody, S.** (2003a) Are we learning to make better plans? A longitudinal analysis of plan quality associated with natural hazards, *Journal of Planning Education and Research* 23 (2): 191-201.

**Brody, S.** (2003b) Implementing the principles of ecosystem management through local land use planning, *Population and Environment* 29 (6): 511-540.

**Brody, S.,** W. Highfield, V. Carrasco (2004) Measuring the collective planning capabilities of local jurisdictions to manage ecological systems in southern Florida, *Landscape and Urban Planning* 69: 32-50.

**Brody, S.,** V. Carrasco, and W. Highfield (2006) Measuring the adoption of local sprawl reduction planning policies in Florida, *Journal of Planning Education and Research* 25: 294-310.

**Bullard, R.** (ed.) (2007) *Growing Smarter: Achieving livable communities, environmental justice, and regional equity*. Cambridge: MIT Press.

**Burby, R.J.,** and Dalton, L.C. (1994) Plans can matter! The role of land use plans and state planning mandates in limiting the development of hazardous areas. *Public Administration Review* 54:3, 230-238.

**Burby, R.J.,** P.R. Berke, R.E. Doyle, S.F. French, D.R. Godschalk, E.J. Kaiser, J.D. Kartez, P.J. May, R. Olshansky, R.G. Paterson, and R.H. Platt (1999) Unleashing the power of planning to create disaster-resistant communities. *Journal of the American Planning Association* 65:3, 247-258.

**Caro, R.A.** (1974) *The power broker: Robert Moses and the fall of New York*. New York; Knopf.

**Godschalk, D.R.**, T. Beatley, P. Berke, D. Brower and E. Kaiser (1999) *Natural Hazard Mitigation: Recasting Disaster Policy and Planning*, Island Press, Washington, D.C.: 327-391.

**Godschalk, D.R.** (2004) Land use planning challenges: Coping with conflicts in visions of sustainable development and livable communities. *Journal of the American Planning Association* 70:1, 1-9.

**Hoch, C.** (2002) Evaluating plans pragmatically. *Planning Theory* 1 (1): 53-75.

**Hoch, C.** (2007) How plan mandates work: Affordable housing in Illinois. *Journal of the American planning Association* 73:1, 86-99.

**Hopkins, L.D.** (2001) *Urban development: The logic of making plans*. Washington, D.C.: Island Press.

**Kaiser, E.J.**, and J. Davies (1999) What a good plan should contain: A proposed model. *Carolina Planning* 24:2, 29-41.

**Kaiser, E.J.**, D.R. Godschalk, and S. Chapin, Jr. (1995) *Urban land use planning*. Fourth edition. Urbana, IL: University of Illinois Press.

**Kaiser, E.J.**, and D.R. Godschalk. (1995). Twentieth century land use planning: A stalwart family tree. *Journal of the American Planning Association* 61:3, 365-385.

**Kalkhoff, W.** and S. Thye (2006) Expectation states theory and research: New observations from meta-analysis. *Sociological Methods & Research* 35 (2): 219-249.

**Knaap, G.J.**, C. Ding, and L.D. Hopkins (2001) Do plans matter? The effects of light rail plans on land values in station areas. *Journal of Planning Education and Research* 21, 32-39.

**Meck, S.** (ed.) (2002) *Growing smart legislative guidebook: Model statutes for planning and management of change*. 2 vols. Chicago: American Planning Association.

**Nelson, A.** and S. French (2002) Plan quality and mitigating damage from natural disasters: A case study of the Northridge Earthquake with planning considerations, *Journal of the American Planning Association* 68 (2): 194-207.

**Norton, R.** (2005) More and better local planning: State-mandated local planning in coastal North Carolina, *Journal of the American Planning Association* 71 (1): 55-72.

**Schon, D.A.** (1983) *The reflective practitioner: How professionals think in action*. New York: Basic Books, Inc.

**Smith, C.** (2006) *The Plan of Chicago: Daniel Burnham and the remaking of the American city*. Chicago; University of Chicago Press.

**Talen, E.** (1996) After the plans: methods to evaluate the implementation success of plans, *Journal of Planning Education and Research* 16:2, 79-91.

**Termorshuizen, P.**, Opdam, and A. van den Brink (2007) Incorporating ecological sustainability into landscape planning, *Landscape and Urban Planning* 79: 374-384.

**Wolf, F.** (1986) *Meta-analysis: Quantitative methods for research synthesis*. London: Sage Publications: 65 pp.

Table 1: Characteristics of Plan Quality that Serve as Evaluation Criteria

---

**Internal Characteristics**

1. *Issue identification and vision*: description of community needs, assets, trends and future vision.
  - 1.1 Assessment of major issues, trends, and impacts of forecasted change.
  - 1.2 Description of major opportunities for and threats to desirable land use and development.
  - 1.3 A vision that identifies what the community wants to be.
2. *Fact base*: analysis of current and future conditions, and explanation of reasoning.
  - 2.1 Present and future population and economy.
  - 2.2 Existing land use and land supply, and future land demands for various uses (e.g., housing, commercial, industrial, public facilities).
  - 2.3 Existing capacity and future demand for public infrastructure.
  - 2.4 State of natural environment resources and constraints.
  - 2.5 Clear maps and tables that support reasoning, and enhance relevance and comprehensibility.
3. *Goals*: reflections of public values that express desired future land use and development pattern.
  - 3.1 Statements of future desired conditions that reflect breadth of community values.
4. *Policies*: specification of principles to guide public and private land use decisions to achieve goals.
  - 4.1 Sufficiently specific (not vague) to be tied to definite actions.
  - 4.2 Spatial designs that specify future land use, infrastructure, transportation, and open space networks that are sized to accommodate future growth.
5. *Internal consistency*: issues, vision, goals, policies, and implementation are mutually reinforcing.
  - 5.1 Goals must be comprehensive to accommodate issues and vision.
  - 5.2 Policies must be clearly linked back to goals and forward to implementation actions.
  - 5.3 Monitoring should include indicators to gauge goal achievement and effectiveness of policies.
6. *Implementation*: commitments to carry out policy driven actions.
  - 6.1 Timelines for actions.
  - 6.2 Organizations identified that are responsible for actions.
  - 6.3 Sources of funding are identified to supporting actions.
7. *Monitoring and evaluation*: provisions for tracking change in community conditions.
  - 7.1 Goals are based on measurable objectives, e.g., 40% of residents within ¼ mile of transit stop.
  - 7.2 Indicators of objectives to assess progress, e.g., annual % of residents within ¼ mile of transit stop
  - 7.3 Organizations identified responsible for monitoring.
  - 7.4 Timetable for updating plan based on monitoring of changing conditions.

**External Characteristics**

8. *Organization and presentation*: provisions to enhance understandability for a wide range of readers.
    - 8.1 Table of contents, glossary of terms, executive summary.
    - 8.2 Cross referencing of issues, vision, goals, and policies.
    - 8.3 Clear visuals, e.g., maps, charts, and pictures, and diagrams
    - 8.4 Supporting documents, e.g., video, CD, Web-Page.
  9. *Inter-organizational coordination*: integration with other plans/policies of public and private parties.
    - 9.1 Vertical coordination with plans/policies of federal, state, and regional parties.
    - 9.2 Horizontal coordination with plans/policies of other local parties within/outside local jurisdiction.
  10. *Compliance*: consistent with the purpose plan mandates.
    - 10.1 Required elements are included in plan.
    - 10.2 Required elements fit together.
-

Table 2: Summary of Plan Quality Studies

Investigators	Topic	Design*	Setting	Sample
1. Burby & May 1997	Hazards	COM	USA	90 mandated local plans 90 non-mandate local plans
2. Berke et al. 1997	Hazards	COM	NZ USA	16 regional plans 7 FL regional plans
3. Deyle & Smith 1998	Hazards	CS	USA	18 FL local plans
4. Berke et al. 1999	Hazards	COM	NZ	34 local plans 16 regional plans
5. Godschalk et al. 1999	Hazards	CS	USA	44 state plans
6. Berke & Manta-Conroy 2000	Sustainable development	COM	USA	10 sus dev local plans 20 non-sus dev local plans
7. Berke et al. 2002	Human rights	CS	NZ	34 local plans
8. Nelson & French 2002	Hazards	CS	USA	19 CA local plans
9. Brody 2003a	Hazards	TS/** COM	USA	30 FL local plans 29 WA local plans
10. Brody 2003b	Ecosystems	CS	USA	30 FL local plans
11. Brody et al. 2004	Watersheds	CS	USA	35 FL local plans
12. Norton 2005	Coastal	CS	USA	40 NC local plans
13. Brody et al. 2006	Smart growth	CS	USA	46 FL local plans
14. Termorshuizen et al. 2007	Ecosystems	CS	Holland	38 regional plans
15. Hoch 2007	Housing affordability	CS	USA	36 IL local plans

\* CS = cross sectional; COM = comparative; TS = time series.

\*\* Time series: 1991 and 1999 plan quality data were collected for the Florida and Washington samples of plans.



Table 3: Summary of Findings for Internal Characteristics of Plan Quality

Investigators	Issue	Fact base	Goal	Policy	Internal consistency	Implement	Monitor & evaluate
1. Burby & May 1997							
mandate plans		.26	.34	.13			
non-mandate plans		.05	.09	.03			
2. Berke et al. 1997							
NZ		.13	.68	.11			
FL		.45	.53	.23			
3. Deyle & Smith 1998*							
4. Berke et al. 1999							
local plans	.47	.06			.66		.39
regional plans	.61	.12			.62		.21
5. Godschalk et al. 1999		.24	.33	.24		.24	.24
6. Berke & Manta-Conroy 2000							
sustainable dev				.32			
non-sustainable dev				.36			
7. Berke et al. 2002	.44	.15			.60		
8. Nelson & French 2002		.21	.18				
9. Brody 2003							
t <sub>1</sub> = 1991		.09	.10	.05			
t <sub>2</sub> = 1999		.12	.13	.12			
10. Brody et al. 2003		.22	.37	.44		.58	
11. Brody et al. 2004		.25	.36	.42		.30	
12. Norton 2005		.65	.62	.69	.62	.67	.58
13. Brody et al. 2006				.12			
14. Termorshuizen et al. 2007		.30	.16	.87			
15. Hoch 2007		.47		.14			
Overall Means*	.48	.23	.28	.25	.63	.44	.38
(Standard Deviation)	(.06)	(.16)	(.17)	(.24)	(.02)	(.19)	(.15)

\*Overall means are weighted based on sample size of each study.

Table 4: Summary of Findings for External Characteristics of Plan Quality

Investigators	Organization & Presentation	Coordination	Compliance
1. Burby & May 1997			
2. Berke et al. 1997			
3. Deyle & Smith 1998*			.44
4. Berke et al. 1999			
local plans	.48	.43	.35
regional plans	.37	.46	.65
5. Godschalk et al. 1999		.23	
6. Berke & Manta- Conroy 2000			
7. Berke et al. 2002			.70
8. Nelson & French 2002			
9. Brody 2003			
10. Brody et al. 2003		.51	
11. Brody et al. 2004		.43	
12. Norton 2005			
13. Brody et al. 2006			
14. Termorshuizen et al. 2007		.74	
15. Hoch 2007			.91
Overall Means* (Standard Deviation)	.44 (.05)	.46 (.17)	.63 (.21)

\* Overall means are weighted based on sample size of each study.

## End Notes

---

<sup>1</sup> Both plans would be classified as elitist by today's standards. The client for the Chicago Plan was the Commercial Club of Chicago, although generations of school children in the city studied the plan in a manual prepared in 1911 by Walter D. Moody. Moses used the power he accumulated through setting up independent commissions to push through his freeways and large construction projects, although the beneficiaries were often lower income families who gained access to new housing and recreation facilities..

<sup>2</sup> Hoch (2007) read the 36 written plans, evaluating them for compliance, consistency, relevance, and commitment. He also surveyed local officials concerning their attitudes toward the mandate.

<sup>3</sup> See for example, the criteria listed in Berke, Godschalk, and Kaiser (2006, pp. 69-74); the Florida Department of Community Affairs checklist for preparing a comprehensive plan update (<http://www.dca.state.fl.us/fdcp/DCP/EAR/1Introduction.pdf>); or the Community Land Use Evaluation for Natural Hazards (CLUE) criteria established by the Institute for Business and Home Safety (<http://www.ibhs.org/publications/downloads/543.pdf>).

<sup>4</sup> Baer (1997) notes the difficulty of formulating post-modern criteria, given their objections to rationality, clarity, consistency, and instrumentality. He comes down on the side of an informed and cautious modernist approach that does not become too enamored with techniques and expertise. In order to clarify the unsystematic vocabulary of the field, he recommends that plan "critique" be used to refer to an outside review after the plan is published, that plan "assessment" be used to label the testing of alternatives during the plan-making process, that "comparative research" be used to describe the post-adoption (but pre-evaluation) analysis of plans, and that "post-hoc plan outcomes" be the title of work that empirically evaluates plan implementation over time.

<sup>5</sup> An illustrative application of the *internal* and *external* dimensions of the plan quality evaluation framework was conducted for the 2000 *Denver Comprehensive Plan* and the 2002 *Blueprint Denver: Land Use and Transportation Plan* (see Godschalk 2004; and Berke, Godschalk, and Kaiser 2006: pp. 74-76).

<sup>6</sup> While contextual quasi-controls (e.g., population size and growth rates, and income levels of local communities) are potentially important factors that effect plan quality, we only focus on the strengths and weaknesses of the three research designs shown on table 2 in determining plan quality scores. A discussion of the implications of combining a quasi-experimental design with each of the three designs would be too long and not consistent with our main goal aimed at findings on plan quality.

<sup>7</sup> Proportionate scores were calculated but the scales varied across studies; for example Brody (2003) used a 0 to 10 scale, and Berke et al (1996) used 0 to 100 scale. The scores from these studies were standardized to a 0 to 1 scale. In studies that reported the percent of plans that included a particular item -- for example Temorshuizan, Opden and van den Brink (2007) reported the percent of plans that included clear delineation of natural areas -- the percent is simply converted as a proportionate score on a 0 to 1 scale.