

CHAPTER 3

Making Plans

The planning process described in Chapter 1 and the principles that define environmental planning discussed in Chapter 2 ultimately become embodied in a plan. This plan expresses the goals and objectives of a society that will guide the allocation of functions within the land-use system to produce a desired future state. How a plan takes shape, its design, and the influences that direct its formulation are the major themes of this chapter. Here we will examine the technical aspects of the plan as a decision-making document, together with the philosophical foundation that anchors the ideological features of design to specific physical outcomes.

A conceptual view

A plan can be thought of as a blueprint for the future. It presents general goals and objectives of the community and blends them with specific policy recommendations developed with the single purpose of moving the community closer to some desired future. Earlier, we spoke in general terms about the nature of goals and objectives within the context of the planning process. In that discussion these ideas were vague and suggested that something meaningful drives planning. We now want to take that background information and expand on it and examine what actually goes into a plan and what it means.

From a purely pragmatic point of view, a plan is

an official public document adopted by a local government as a policy guide to decisions it will make regarding the physical development of the community. Whether it is termed a general plan, comprehensive plan, community plan, or something similar, the plan indicates in direct language how government leaders want the community to develop over a broadly defined time horizon. Typically, time is expressed in a plan using increments of 10 to 25 years and sometimes longer. However, in all cases, the expectation implied in a plan is that the goals expressed within it will be realized gradually over this time horizon. Precisely how well those goals were realized over the expressed time horizon has received comparatively little attention. Yet auditing and monitoring the plan is an important part of ensuring that its role as a policy tool remains constant and that decision-makers follow the specified policy recommendations consistently over the time horizon.

It has often been stated that the essential characteristics of a plan are that it is comprehensive, general, and long range. Although these words are easy to use, their meaning frequently blurs. The term “comprehensive” suggests that, to be useful, a plan should encompass all geographical parts of the community and all functional elements that influence physical development. If the plan is not complete in its characterization of the planning area, and if certain critical features are omitted from consideration, it will not provide the guidance or detail needed to direct change. A

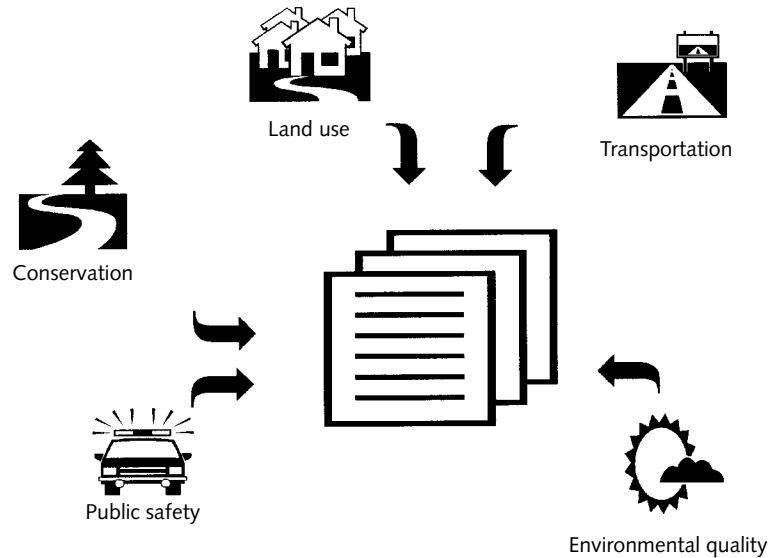


Fig. 3.1 Typical elements incorporated into plans.

partial plan has limited value given the connectedness that defines the planning area, its environment, and the complexities that describe human interaction within this mix. Similarly, the term “general” implies that, to be effective, a plan should summarize policies and proposals, but not provide specific locations or detailed regulations. If a plan introduces too specific a design it leaves little room to adapt to changes that may result over the time horizon. By maintaining a more generalized posture, recommendations can suggest specific changes that policy-makers can enforce through existing laws and regulations, or identify gaps where new laws or regulations may be required. Finally, the concept of a long range directs the plan and all involved in its creation to look beyond the foreground of pressing current issues and consider instead the problems and possibilities 10, 20, 30 years into the future. Long-range thinking directs focus on proactive decision-making. Although not typically a feature of a culture grounded in the immediate satisfaction of wants and needs, a plan that does not assume a proactive stance provides little guidance to those who must decide on the allocation and distribution of scarce resources, or to those concerned with management of a sustainable land-use/environmental system. Given these essential qualities,

what exactly goes into this document and how do all the parts fit together to produce a workable “blueprint”?

While plans will vary in content and format, certain elements are common and form the salient characteristics of a plan and its focus. (See Fig. 3.1.) These fundamental topics of interest and concern include:

- **Land use** – describing the current characteristics of the land-use system, future conditions that may arise, together with policies and programs directed at specific land-use issues or development goals.
- **Transportation and circulation** – explaining the existing road network, traffic conditions, and anticipated future conditions with policies and programs designed to address specific transportation needs and goals.
- **Public safety** – characterizing natural and human-made hazards including geology, floods, hazardous materials, wildfires, and other potential sources of risk within the planning area, along with policies and programs designed to reduce human injury, loss of life, property damage, and social-economic dislocations due to these events.
- **Conservation** – describes existing natural resources within the planning area and

presents goals and policies designed to enhance the conservation and management of natural resources and open space, the preservation and production of resources, the promotion of outdoor recreation, and the protection of public health and safety.

- **Environmental quality** – discussing pollution factors and concerns such as those affecting noise, air, water, and soil with specific reference to existing pollution levels, comparison to standards, identification of sensitive receptors, and goals, policies, and programs targeted at major environmental quality issues.

Other elements may also be found in a plan, including sections devoted to the analysis and assessment of housing, education, or public facilities (Kelly & Becker, 2000). Still, in other cases, specific elements may be mandated by statutory regulations specific to a given governmental authority.

Regardless of contents, certain analytical inputs are common to all elements that comprise a plan, and these guide its physical development. These are the skills of the planner and the tasks that are performed as data is transformed into information and placed into the plan: (1) description and documentation, (2) definition, (3) projection, and (4) prescription. Taken together they explain the intellectual skills brought to the plan and the principal methods used to communicate its features to decision-makers.

1 Description and documentation

Because a plan summarizes existing conditions and provides critical background information to help improve basic understanding of the planning area, description is an essential feature of the plan. Description, however, does not occur in a vacuum. Rather, description implies the careful collection and selection of data that will effectively characterize the important features, qualities, and quantities that will be discussed in the plan. As an intellectual activity, description involves several interrelated purposes. At the most basic level, description enables the decision-maker to “see” the characteristics of the objects and features under

consideration. For example, in a certain mid-western community in the US, it was decided that the time had come to update the comprehensive plan. The last major revision to the plan was done in the 1970s, and civic leaders recognized the need to begin again. Since so much time had elapsed since the last plan was made, planners needed to begin from square one and collect and summarize the general social, economic, and environmental characteristics of the community, so they could assess the current state of the community and begin to piece together an explanation how the city has changed since the last plan.

Therefore, to be useful, description must therefore provide insight into the patterns and processes that explain the arrangement of objects and features that constitute the planning area. In this sense, description should provide important cues as to

- Why the pattern is what it is.
- How that pattern came to be.
- What factors influence its disposition.
- What makes this pattern significant.

Although description may not demand a detailed geography of every topical area that might define some aspect of the planning area, it should be systematic, organized, and allow someone not familiar with the planning area to gain a reasonable understanding of the subject matter. To illustrate the role of description, consider the contents of a conservation element that might be found in a general plan. This element might begin with a review and inventory of existing resources. Within this section the natural resources, including various categories of land cover, native plants, native fauna, historic sites, and amenities, would be subjected to detailed examination and representation in the form of maps and diagrams. For each factor, description would concentrate on the location of these resources, the site and situational factors that characterize their location, and their physical presence in the landscape. Following such a treatment, the dominating features that distinguish these areas could be discussed, which might include detailed explanations concerning specific plant or animal species and maps that delineated these areas and placed them into a geographical context with respect to the total planning area. In

Table 3.1 Common information sources.

United States Geologic Survey
US Department of Agriculture Soil Conservation Service
National Oceanic and Atmospheric Administration
US Army Corps of Engineers
State Departments of Natural Resources
Water districts
Utility districts
Historical societies
Universities and colleges

addition, factors such as soils, agricultural lands, groundwater recharge zones, and recreation areas may also be included in a description of the resource base. To help frame these descriptions, statistical data is frequently used to establish magnitudes and summarize quantities to help the reader gain an appreciation of scale and importance. Since the main purpose of description is to give the reader background, care must be given to ensure that only those salient factors are included in the discussion. This requires the exercise of judgment in selecting those factors that give the subject definition and significance (Table 3.1).

Description also serves another purpose, that of documentation. It is not uncommon or surprising that decision-makers or members of the public will be ignorant with respect to the detailed aspects of their environment. No person should be assumed to have complete knowledge of the groundwater recharge zones, housing conditions, demographic characteristics, or any other combination of variables that define the environmental complex that is the planning area. Describing these features, depicting their geographic location and extent, or providing an inventory or accounting of their nature and distribution, documents and records their existence. This record contributes to a better understanding of their significance and provides critical baseline data against which change may be assessed.

2 Definition

Recognizing that a plan represents a policy instrument, it will necessarily require the use of language and concepts that can be inexact or

ambiguous in meaning. While it may not be the intention of the planner to obfuscate, the potential to confuse those reviewing the plan always exists. Definition plays a dual role in this regard. First, definition does much to provide detailed explanations of terms and concepts used in the plan whose meaning may be unclear or unfamiliar to the audience. Secondly, definition helps fulfill the obligation of disclosure, ensuring that critical ideas, issues, or information are communicated clearly and effectively. Because a plan is written for all members of the community, the document should be written in language that can be read by a lay-audience. There is no single more frustrating experience for the planner than to be making a public presentation of a plan and be asked to explain what terms and details mean because they were aimed over the “heads” of the audience; and nothing calls the planning process into doubt more than “double-speak” that erodes public trust and confidence. Technical terms must be defined throughout the text and detailed technical data must be referenced in supporting documents. The physical organization of the plan is therefore critical. In purely mechanical terms, a plan will be divided into chapters (sections) including an introduction, and while a plan is not read cover to cover in the same fashion as one reads a novel, the arrangement of those sections should be logical. An example of a generic table of contents that could be found in a typical general plan is shown in Table 3.2. Although this instance is hypothetical, each chapter will contain two principal sections, one that describes the present and future conditions of the topic with respect to the planner area, the other discussing community goals, policies, and implementation programs.

Definition also carries another important interpretation within the context of developing the plan. This aspect is perhaps more critical than the technical questions surrounding the mechanics of its contents. Here, definition speaks to the issue of defining the planning problem and the relationships that characterize the variables that control or influence the problem. Specifying and defining the variables and their relationships that will be discussed in the plan draw on the knowledge, experience, and judgment of the planner. Through

Table 3.2 Basic elements of a plan.**Introduction**

Purpose and nature of the plan
 Role of the planning process in local government
 Relationship of the plan to other plans

Background

Historical background of development in the community
 Current conditions and trends

- the built environment
- the natural environment
- the economic environment
- the social environment

 Current and emerging issues that carry long-term implications

Assumptions

Assumed effects of external forces on the future of the local community

- physical developments
- social developments
- economic development
- political developments

 Local policies, values, and actions that will affect development
 Regional goals and issues
 Forecasts of regional and local growth

Overview of the plan

Community goals and objectives
 Basic community design concepts
 Major design proposals

Major implementation strategies**Planning area maps and diagrams****Planning elements**

Land use
 Circulation
 Community facilities
 Utilities
 Transportation
 Housing
 Public safety
 Natural resources
 Conservation and open space
 Natural hazards
 Environmental quality
 Noise
 Growth management

- Factors that affect attributes – explaining the types of activity or process that influence the status or condition of a variable.
- Qualities or quantities to measure – explaining the characteristics of an attribute that lend themselves to measurement.
- Methods of measurement – explaining the specific methods available to quantify the attributes and express their salient features.

Identifying the problem and the attributes that describe it provides the logical connection between specific planning issues and the goals and policies that will follow to address them.

3 Projection

As a document designed to guide the long-range management of a community's land and natural resources, a plan employs numerous methods of forecasting to complete and evaluate various problem scenarios. For example, trends in economic growth and job creation may be used to develop future population growth. Those projections, in turn, may be used to estimate anticipated demand for residential land use. Estimated changes in residential land can be used to project changes in open space, zoning, resource use, utility demand, and energy consumption. In each case, effects can be evaluated and policies or programs can be developed to address each new situation in relation to the goals expressed in the plan. For example, the Baltimore Ecosystem Study has made extensive use of projection methods to understand trends in development around the Chesapeake Bay. Here, projection methods are being used in order to form better policies aimed at controlling environmental impacts associated with intensified human use of the region. Sources examining the role of projection in decision-making and the use of models in planning include Lein (1997), Klosterman et al. (1993), and Gordon (1985).

A variety of projection techniques are used in planning. In the majority of cases, projection involves the application of a model. This model typically falls into one of three descriptive categories: (1) digital process models, (2) spreadsheet models, (3) general-purpose simulators (Lein, 1997).

this process of specification several important factors must be considered:

- Definition of attributes – explaining what the variables are and how/why they relate to the problem.

1. **Digital process models** describe computer simulation models developed to simulate key socioeconomic, environmental, or physical processes. Models of this class describe specialized computer programs designed to function as stand-alone packages that require data and parameters placed into formatted input files. Such models generate their own output, be it a projection of population, traffic volume, air pollution concentration, or level of nonbasic employment demand. Current use of any computer model requires an understanding of the problem under investigation, together with the specific information that controls operation of the model (Lein, 1997). Selecting the appropriate digital model as an aid to planning occurs after the information to be gained from the model is understood and the data required to drive the model is collected.

2. **Spreadsheet models** define programs that have been developed using common spreadsheet or data management software packages. Models of this type store data as a two-dimensional table, permit calculations with the data, and instantly display results in a variety of graphic formats. Because of their widespread use in budgeting and administration, spreadsheets are common and are an attractive alternative for data analysis and modeling (Hardisty et al., 1993; Cartwright, 1993; Klosterman et al., 1993). Sophisticated spreadsheet programs offer an array of built-in functions that greatly enhance computation, database management, file import and export, and display.

Although these systems were designed primarily for financial analysis, they have evolved into programming environments and offer several features that can enhance the use of projection in planning analysis (Lein, 1997):

- Relative ease of programming.
- Comparative ease of modification.
- A transparent design.
- A functionality that provides power and flexibility.
- A capability to generate an assortment of graphics.

The major disadvantages associated with spreadsheet models are speed and processing capabilities. In general, models written using spreadsheets tend to be slower and less elegant

when compared to those developed using a standard programming language. Furthermore, because of their spreadsheet format, iterative processing is more difficult to implement, which can limit their application to dynamic systems. These drawbacks notwithstanding, numerous models applicable to a range of planning problems have been introduced (Klosterman et al., 1993).

3. **General purpose simulators** describe a family of computer languages developed specifically to support modeling efforts. The main advantage of this approach to projection is that these languages provide a simple syntax for developing a model that improves the representation of process and the characterization of complex systems. Several of these features have been summarized by Lein (1997) and include:

- Controlling events.
- Collecting and representing data.
- Generating random variables.
- Managing simulation time.

Of the general-purpose simulators available to the planner, those with the capacity to model continuous systems of events are of particular interest. An excellent demonstration of such models can be found in Hannon and Ruth (1994). Using a graphic-based simulation language, a range of dynamic problems can be examined, from pollution and ecological process to economic modeling.

A variety of topics may be subject to some form of projection into the future. Typical features of the planning problem subject to projection include land use, transportation, population, air and water quality, noise levels, and employment. A more comprehensive listing of landscape variables that can be used to form projections is presented in Table 3.3.

4. **Prescription.** In planning, to prescribe means to direct the use of land and other resources as a remedy for specific social, economic, or environmental problems. As a sequence of actions that become realized in the plan, prescription defines a multistage process that involves:

- a) Exploring the problem and forming a basic understanding of the relevant objectives and values.
- b) Producing a set of alternative choices.

Table 3.3 Commonly projected variables in plans.

Human/economic:
Demographic factors
Land-use change
Employment
Income characteristics
Transportation flows
Solid waste generation
Housing factors
Noise conditions
Energy demand
Spatial interaction
Demand factors
Physical/environmental:
Air quality
Water quantity/quality
Groundwater processes
Flood Processes
Land Cover Change
Habitat Characteristics
Erosion/Sedimentation
Hydrologic Systems
Food Chain/Food Web Dynamics
Pollutant Fate and Transport

- c) Identifying the adverse and beneficial properties of the alternatives.
- d) Evaluating alternatives.
- e) Recommending the “best” alternative as the optimal solution.

The solution is generally some form of regulatory policy or program that may be expressed as either an objective that can be maximized or a constraint that can be minimized. Given the reality within which planning operates, each objective and constraint carries a political weight, whether stated explicitly or not, and that weight can influence how the “best” alternative is defined.

Directing the use of land and other resources also suggests that prescription is a form of analysis embedded in a decision-making process. Prescriptive analysis may be highly formalized, or it may remain an informal procedure. Formal methods of prescription identify very structured approaches to problem-solving and may involve the use of well-understood procedures for simplifying the process of selecting the optimal alternative. Informal methods recognize that plans grow out of political and professional deliberation, negotiation, and bargaining. Optimal solutions, in

this context, are defined not in terms of a single quality or quantity, such as might be produced from a formal methodology; but rather on the basis of professional judgment, public opinion, or a multidimensional political perspective. With either approach, the goal is the same: to narrow down the possibilities and identify a workable solution.

Plan formulation

A plan is designed to fulfill three important purposes:

- 1 To facilitate the process of making policy.
- 2 To communicate that policy to all interested and affected parties.
- 3 To assist in the implementation of policy.

The process of formulating this plan can be divided into stages. Each stage produces a particular type of plan or specific element. The sequence of stages and the products generated by each suggest a progression from ends to means, as well as from general policy statements to specific programs (Kaiser et al., 1995). The basic stages that outline the process of plan formulation are given in Table 3.4. As illustrated in Table 3.4, the first stage in formulating a plan begins by developing a comprehensive understanding of existing and emerging environmental conditions. Drawn from this initial description are a set of implications that identify problems or concerns around which goals and objectives are created. For instance, in our earlier example of the mid-western city, let’s suppose that during the description and documentation process it was noted that new development in the region has occurred in areas where soils have a high erosion potential. Since this might be a contributing factor to the changes in stream water quality that have also been documented, goals to address both the development issue and water-quality changes will be likely components of the plan. Stage two of this process extends the goal-setting and problem formulation stage by adding explicit prescriptive studies that: (1) identify the present and future demand for land resources; (2) specify areas of critical concern, such as lands to preserve to enhance natural processes, lands to

Table 3.4 Stages in the plan formulation process.

Stage 1: Direction-setting	Describing existing and emerging conditions and causes Setting Goals Formulation of general policies
Stage 2: Land classification	Analyzing basic land demand and supply Designating areas for natural processes Designating areas for urban use Designating areas for agricultural production
Stage 3: Land-use design	Analyzing detailed land demand and supply Designating locations for employment and commercial centers Arranging residential communities and facilities Designating locations for infrastructure and community facilities
Stage 4: Development management	Analyzing implementation factors Setting procedural goals Specifying components of the plan Specifying standards and procedures

protect for agricultural production; and (3) developable areas suitable for future use.

Several important tasks are associated with this stage of plan formulation. Each of these tasks becomes the subject of systematic analysis and defines the core information presented in the plan. These tasks include:

- 1 Developing locational standards to guide land-use allocation.
- 2 Deriving a geographic expression of suitability to guide land-use placement.
- 3 Determining the amount of land that will be needed to meet anticipated future demand.
- 4 Defining carrying-capacity levels given to estimated available land.
- 5 Exploring alternative location arrangements and designs for future development activity.

The third stage in this process builds on the foundation completed in stages one and two. Here, attention is focused on the optimal geographic allocation of functions to specific loca-

tions in the landscape. At this stage of plan formulation consideration is given to the holistic aspects of design and the future land-use system's relationship to critical environmental parameters. By considering the future arrangement of housing, commercial uses, industrial facilities, parks, open space, and infrastructure with respect to maintaining environmental quality, the plan can become a reasonable "blueprint" that guides development with a minimum of environmental disruption.

The final stage of plan formulation considers the vexing problem of how this optimal future arrangement can be achieved. Emphasis during this stage is given to the design and implementation of programs to institute development regulations, capital improvements, and incentives that local government can employ to direct land use and environmental change. A selection of instruments that government may call upon to direct and manage changes in the land-use system are provided in Table 3.5. Within the context of the plan, this stage produces a sequence of recommendations that can be adopted and implemented over the time horizon of the plan.

To illustrate this aspect of the process and its language, consider the following community goal that might be expressed in a hypothetical plan:

To preserve the natural and "manmade" resources of the planning area, including plant and animal habitats, water courses, and historic structures.

To meet this goal a series of policy statements lined to specific programs are offered. One example might include:

Policy 1: Preserve those natural wildlife habitats which support rare and endangered species of plants and animals where appropriate.

Making this policy reality requires connecting it to some type of action-forcing mechanism, such as:

Program 1.1: Restrict development to one single family home on existing lots of record within

Table 3.5 Government tools to implement and direct plans.

Corporate powers – directing land acquisition and development

Construction of streets, roads, and water and sewage treatment facilities
 Acquisition and development of parks
 Acquisition of sites for low and moderate income housing
 Purchase of development rights and scenic easements
 Creation of development corporations

Police powers – regulatory action

Specific plans

Zoning:

- open-space zoning
- environmental-hazard zoning
- inclusionary zoning
- planned unit development zoning

Subdivision regulations

Park dedication requirements

School dedication requirements

Review and regulation of public works

Housing and building regulation

Code enforcement

Environmental review procedures

Design review

Other options

Redevelopment

Intergovernmental cooperation

Public information

Data management

Monitoring

Cooperative arrangements with private sector

nondevelopment portions of designated habitat areas.

Program 1.2: Designate the majority of upland areas Public Health and Safety districts to protect wildlife habitat.

In this example the two programs direct the use of land in specific ways, and designate land areas that restrict use or limit the use of land in areas where analysis has shown them to have important habitat functions. Using these programs to direct future land use is seen as one way to meet the goal of preserving habitat within the planning area.

Next, let's consider the following goal in our hypothetical plan related to environmental risk.

To minimize the risks to lives and property due to landslides and other nonseismically induced geological hazards within the planning area.

This goal may be satisfied in a number of ways. One policy introduced in the plan recommends the following.

Policy 2: Prohibit the construction of any structure intended for human occupancy in any landslide-prone area unless geologic investigations or project mitigation demonstrate low levels of acceptable risk at the site.

Several different programs, including the following three may implement this policy.

Program 2.1: Require geologic and geotechnical engineering studies for all new development prior to the issuance of building permits on slopes greater than 20% and within areas of high, moderate-to-high, or moderate potential for landsliding.

Program 2.2: Require developers to include drainage, erosion, and landslide mitigation measures where necessary to reduce landslide potential.

Program 2.3: Minimize earth-moving activity in areas of moderate to high landslide potential.

The programs identified here direct attention to the use of site investigation measures, mitigation techniques, and construction practices, along with detailed environmental data to reduce the risks associated with landslides. Using these tools, future development will be placed where risks are acceptable and damage to property can be kept at a minimum.

Finally, let's examine a land-use goal with an environmental focus.

To balance housing development and environmental protection.

This is an extremely general goal without much in the way of specifics to help frame policy. However,

the idea of balancing development with environmental protection is common. To reach this goal planners have recommended the following policies.

Policy 3: Preserve and enhance environmental quality in conjunction with the development of housing.

This policy statement is tied directly to the following program.

Program 3.1: Require environmental review of development proposals to determine the significance of their probable effects.

Policy 4: Encourage energy and water conservation designs and features in residential development.

Program 4.1: Consider building orientation, street layout, lot design, landscaping, and street tree configuration in subdivision review for the purposes of solar access and energy conservation.

Each of the goal and policy statements presented in the examples identifies a problem, fact, or issue that affects the planning area. Once identified, one or more directives decision-makers can follow to address each problem are presented. Finally, one or more programs are recommended for implementation which over time will satisfy the goal. Above all, these hypothetical goal statements serve to further illustrate the point that all plans share three essential ingredients: (1) facts, (2) goals, and (3) recommendations. (See Fig. 3.2.)

It is important to recognize, however, that plans are never permanent, and they are not the single purpose of planning. As Kaiser et al. (1995) remind us, plans must be updated periodically to reflect changes in conditions and community values, and they must always be related to other community actions. The goals expressed in a plan emphasize a vision of the future and a means to attain that vision. Through the interrelated activities of search, analysis, synthesis, and selection, the data and opinions that drive the planning prob-

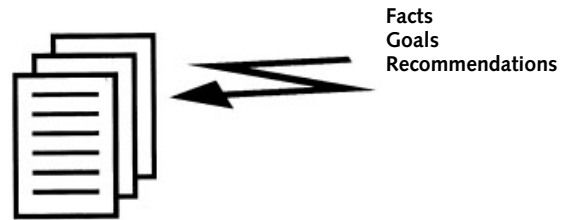


Fig. 3.2 Underlying plan concepts.

lem can be blended together and formulated into a coordinated statement that details community aspirations and concerns. Articulating these aspirations in the form of a plan demands more than the technical expertise of the planner, it requires the continuous involvement of the public.

The role of the community

Citizen participation in planning remains a widely discussed and debated topic (Day, 1997). In general, citizen participation in the planning process is seen as a positive feature since it provides an important avenue for the planner to elicit community attitudes and values. It also facilitates the creation of a forum for citizens to voice specific concerns and problems that can become the focal point for the development of planning goals. At the same time as citizen participation seems to hold a sacrosanct role in democratic political culture, the issue of public participation in the planning process seems problematic (Day, 1997). This is partly due to countervailing forces in political culture that doubt the ability of the general public to constructively contribute to governance (Stivers, 1990).

These contrasting positions stem from a perceived tension between two groups: those who view planning as a rationally organized activity that places importance on technical expertise and impartiality; and those advocates of democratic social and political systems that contribute "noise" and contradicting beliefs, needs, and perceptions which otherwise confuse this rational process. Consequently, citizen participation and its importance in planning tends to fade in and out of favor. This suggests that in some cases mean-

ingful participation might be conceived as problematic (George, 1994; Day, 1997).

Reconciling these opposing views of the public-participation issue depends on one's definition of planning and how the public fits into this process. A more considered view of planning recognizes that good plans spring from the community. From this perspective, the planner serves to facilitate the planning process and lend expertise. Several points can be made in favor of this ideation (Kelly & Becker, 2000; Levy, 1997). First, it avoids the elitist view of the planner as technical professional who remains aloof and detached from the problem. While the planner has skills that a typical member of the public does not possess, it should not imply that the planner is necessarily wiser (Levy, 1997). Secondly, planning problems are complex and multifaceted. It is therefore unlikely that the planner or any other individual or group can have a complete or accurate understanding of the needs or issues confronting the community. Only by taking the public into consideration and tying them into the planning process can their interests be fully represented. Here, as Levy (1997) notes, a plan formed with community input is more likely to be carried out than a plan of equal quality that has been created only by professionals. Thus, by taking the public into the planning process at an early stage, issues critical to the public can be represented in the plan, and people will be better informed regarding its important details. For example, in Athens, Ohio, efforts have been underway to engage the public as the community reshapes its vision. Public meetings and forums that allow community groups and individuals to voice their ideas and concerns will ensure that the vision formed through planning reflects the shared ideas of the community. Also, with community involvement, a level of commitment to the plan is produced which only enhances the plan's long-term viability. Therefore, there are several reasons why citizens should have the opportunity to participate in planning. The most important is simply that our system of government gives citizens the right to have a strong voice in all matters of public policy, including planning. A second reason is that only citizens can provide the information needed to develop, main-

tain, and carry out an effective comprehensive plan. Professional planners and local officials need comments and ideas from those who know the community best: the people who live and work there. Third, citizen involvement educates the public about planning and land use. It creates an informed community, which in turn leads to better planning. Fourth, it gives members of the community a sense of ownership of the plan. It fosters cooperation among citizens and between them and their government. That leads to fewer conflicts and less litigation. Finally, citizen involvement is an important means of enforcing our environmental and land-use laws. Having citizens informed about planning laws and giving them access to the planning process ensures that the laws are applied properly.

Fostering citizen participation begins first by trying to define precisely who represents the public. One major issue when encouraging public participation stems from the observation that the outcomes of participatory processes do not always reflect the aggregate of citizen preferences or interests (Day, 1997). An all-too-familiar reality is the fact that too few people take advantage of their opportunities to participate. As a consequence, outreach on the part of the planner is a necessary step in the formulation of plans and programs if the public is to participate in their development. A variety of approaches can be offered to encourage wider public involvement. These include the use of:

- advisory panels and committees
- open meetings and forums
- press releases and media coverage
- public surveys and questionnaires
- citizen and neighborhood groups
- public presentations and speaking engagements.

Some combination of these approaches will facilitate dialogue between the planner and the community. However, no method is perfect, and many groups may perceive their needs to be under-served.

Perhaps the best way to have strong citizen involvement in planning is to have strong planning for citizen involvement. In other words, a successful citizen involvement program must be carefully

designed and managed. Establish objectives. Assign responsibilities. Allocate money and staff. Set a schedule. Monitor performance. These are basic steps to successful management of any program. Yet all too often these steps are forgotten in the case of citizen involvement. For some reason, citizen involvement frequently is not seen as a program to be actively managed. Rather, it is treated as a passive process, one that will somehow happen automatically if a few notices are mailed and a hearing is held.

It should be recognized, however, that citizen involvement doesn't just happen. The most widespread public participation in planning is found in those communities where involvement is planned and managed carefully and aggressively. Some techniques communities are using include:

- Managing citizen involvement in the same way as code administration or long-range planning – that is, as a major element of the planning program.
- Drawing up a citizen involvement plan for each major legislative action and for land use decisions that involve important community issues.
- Developing a Committee for Citizen Involvement that can:
 - advise planners and policy-makers on how to manage citizen involvement for specific projects,
 - periodically evaluate the citizen involvement program,
 - work with staff to maintain an effective network of citizen advisory committees,
 - act as a mediator to resolve disputes about public participation,
 - act as an ombudsman for citizens concerned about public participation.
- Staffing the citizen involvement program with a professional coordinator from outside the planning department. This arrangement has several advantages. It frees planning staff from citizen involvement duties that might conflict with or take second place to other planning tasks, such as code enforcement. It allows for broader community involvement: citizen concerns are not limited to land use. And the coordinator can serve as

a mediator if the planning department and citizen advisory committees disagree about a land-use issue.

- Giving planners who deal with the public training in customer relations and communications.
- Using role-playing and simulation exercises to help planners, planning commissioners, and other officials to understand the needs and wants of citizens and interest groups.
- Maintaining a registry of stakeholders, interest groups, and individuals with expertise or interests in important land-use topics or areas. Use that registry as a source of contacts when deciding whom to involve in a particular citizen involvement effort. Update the list periodically.
- Earmarking funding for citizen involvement in the budget. Goal 1 requires this, and for good reason: it helps make people aware that citizen involvement cannot happen without a commitment of resources.
- Developing and maintaining an active network of neighborhood organizations. Make sure the committees continue to receive information about permit applications, policy issues, and major projects, such as revisions to the plan or development codes.
- When seeking members for a key committee, using an open process, such as published notices, contacting local civic groups, and posting announcements.

When one is confronting environmental problems, citizen participation in political, community, and neighborhood affairs is critical to the creation and maintenance of a strong, vibrant community. A community without regular interaction among citizens is less a community than a random collection of people. Without active participation, it is difficult for a community to agree on what problems to address and how to move forward collectively to solve them. This means that citizens must be engaged in decision-making processes from the beginning (Kelly & Becker, 2000; Hanna, 1995; Barber, 1981). Two useful instruments to foster early involvement include neighborhood meetings (Table 3.6) and public hearings (Table 3.7). To encourage participation,

Table 3.6 Basic guidelines for making a presentation at a public hearing.

-
- 1 Keep in touch with the planner assigned to the item. The planner can notify you of postponement or new information.
 - 2 Speak to the issue at hand. If a zone change in a master-planned area is being considered, address the merits of the request and not, for example, whether the master plan should have been approved initially.
 - 3 Give letters, petitions, and other documentation to the assigned planner *before* the hearing. The planner will distribute the material to the members of the public body.
 - 4 While there is usually no time limit on comments, be brief and to the point; do not repeat comments made by others.
 - 5 If many people are interested or intend to speak on the item, you may want to select one or more representatives to give the group's position. Anyone wishing to address the item, however, may speak.
-

Table 3.7 Basic guidelines for participation by neighborhood groups.

-
- 1 Keep in touch with the planner in charge of your geographic area.
 - 2 Provide City Planning with a current contact person and phone number.
 - 3 Invite planners to come to your meetings to discuss issues of specific interest.
 - 4 Prepare a map showing the boundaries of your neighborhood group. If it is provided to City Planning, it will assist efforts to notify the group of proposals in the area.
 - 5 Take the time to understand the ordinances and the process.
-

it's essential that citizen groups: keep in touch with the planner in charge of their geographic area, provide the planning staff with a current contact person and phone number, invite planners to come to meetings to discuss issues of specific interest, prepare a map showing the boundaries of the neighborhood group, and take the time to understand the ordinances and the process.

Of particular concern when working with the public participation question are those problems or issues that are highly controversial, and poorly defined. In this case, identifying goals, understanding the problem, and outlining any course of action can be made difficult by the complexities and uncertainties surrounding the problem. The situation can be made worse by public perception

and the diverse attitudes and opinions that must be reconciled. To illustrate this point, consider the dynamics surrounding a locally unwanted land use. The terms NIMBY (Not In My Back Yard) and NOPE (Not On Planet Earth) are very familiar positions when dealing with controversial, high-risk, or poorly understood environmental problems. Both define very strong perceptions that can frustrate the planning process. While they can prove to be intractable positions, they have to be addressed. If not, they only serve to intensify public mistrust of the planning process and encourage an irreverence for the official version of reality that may be offered by the planner (Fischer, 1993).

Planners who view their role as technocratic can inadvertently encourage contrasts in perception; one can be conferred a special status by her or his peers after demonstrating a mastery over a technique or body of knowledge. The attitude which accompanies this ability to calculate unequivocally correct and precise answers, excludes the public from participation and imposes barriers based on scientific knowledge and technical jargon (Van Valey & Petersen, 1987). When opportunities for public participation are provided, the primary mechanism takes the form of a public hearing. However, such hearings often confound and discourage participation (Day, 1997). Public hearings are criticized for:

- occurring too late in the decision-making process.
- being scheduled at times that are inconvenient for the public.
- establishing an atmosphere that inhibits dialogue.
- conducting proceedings that intimidate the public.

The perceptions created by a technocratic philosophy encourage NIMBY activism and further polarize community interests. The resulting deadlock frustrates the planners' ability to achieve consensus on critical issues and contributes to antiparticipation attitudes (Morris, 1994; Inhaber, 1998). Therefore, rather than defining NIMBY attitudes as an irrational response to problems ordinary citizens cannot grasp, the simple solution is to encourage more citizen participation, not less (Fischer, 1993). In fact, Fischer maintains that

planning analysis should be viewed as an evaluation of alternative solutions employing criteria derived consensually. This view suggests a collaborative approach to plan formulation that emphasizes direct contact between those promoting locally unwanted activities and all affected parties (Dear, 1992).

Accepting the premise that the planner's primary obligation is to serve the public interest, the challenge for planning is how to effectively integrate technocratic and democratic contributions when addressing complex issues. Five guiding principles have been recommended (DeSario & Langton, 1987):

- 1 that the dangers associated with maximizing expert and citizen contributions without joint review and interpretation be avoided.
- 2 that the unique contributions of experts at the technical level and of citizens at the normative level of policy-making be encouraged, but that a later stage of mixed review be created that involves experts and citizens in examining issues of impact and trade-offs regarding technocratic and democratic considerations.
- 3 that the issue of the role and power of citizens be made explicit at the outset, and appropriate procedures be developed to reflect power-sharing arrangements.
- 4 that adequate information, access to it, and technical resources be made available to citizens.
- 5 that government be experimental in selecting, evaluating, and refining the procedures for integrating expert and citizen contributions that are most effective in dealing with the unique policy issues with which each are concerned.

With citizens fully engaged in the process, focus can be directed at developing the environmental plan.

Developing environmental plans

Formulating plans and developing a format that compartmentalizes the planning area into specific themes provides a structure that facilitates inclusion of all the relevant information needed for

effective policy-making. This technical aspect of planning, focusing on the guidelines to follow when preparing plans and the procedures that carry the process through to completion, have been discussed in excellent detail by Anderson (1995). Technical guidelines typically direct attention to the comprehensive plan. Although this is a reasonable place to begin, the environmental planning problem is unique. While many aspects of the environment are discussed in a comprehensive plan, there are features of the environment that warrant special consideration. These are the goals and objectives specific to the environment that can be sufficiently different from those surrounding land-use and development issues that they need to be treated as such.

The concept of an environmental plan or comprehensive environmental plan is not a new idea (Miller & De Roo, 1997). A comprehensive environmental plan is a mechanism communities can use to meet the present responsibilities of environmental protection and the future challenges of enhancing environmental quality. With its exclusive focus on the environment, the environmental plan becomes an important way for a community to:

- 1 Set environmental priorities and establish clear goals and objects targeted toward environmental issues.
- 2 Identify environmental resources important to sustainable development.
- 3 Provide a blueprint for compliance with environmental regulations that affect the community.
- 4 Explore alternatives to prevent pollution and efficiently manage environmental resources.
- 5 Develop community support and awareness to environmental protection needs.
- 6 Create an environmental infrastructure that complements community well-being.

The rationale for producing an environmental plan is essentially a response to the more typical tendency to treat the environment in pieces. Thus, while we recognize that environmental variables are interconnected, our general approach to the environment is to fix symptoms one at a time (i.e. protecting water, protecting air, protecting land). With the growing recognition that environmental

protection cannot be successfully achieved unless the environment is treated as an integrated whole, the community environmental plan becomes a central instrument for that integration. However, for an environmental plan to be effective, the environmental responsibilities of the community need to be understood. These responsibilities extend well beyond the larger environmental issues of population, resources, and pollution, or the immediate controversies that grow out of landscape development pressures. The environmental responsibilities germane to the environmental plan are those of local concern where local resources can be committed to their improvement:

- drinking-water quality
- wastewater management
- solid waste management
- leaking underground storage tanks
- hazardous waste management
- emergency response to hazard
- groundwater protection
- wetlands protection
- flood plain zoning
- risk assessment and management
- pollution control.

With attention given to the local environment, developing comprehensive environmental plans shares many similarities with the general procedures outlined previously. The main difference separating environmental plans from land-use or general plans is one of focus. Environmental plans are directed toward the environmental challenges that face the community. To meet these challenges emphasis is given to five main phases in crafting the plan (see Fig. 3.3):

- 1 Developing an environmental vision.
- 2 Defining environmental needs.
- 3 Identifying feasible solutions.
- 4 Implementing the environmental plan.

We will explore these plan formulation stages in the sections that follow.

Developing an environmental vision

With attention directed at the local community, developing an environmental vision serves as a framework that assists all parties involved in making choices about environmental goals. This

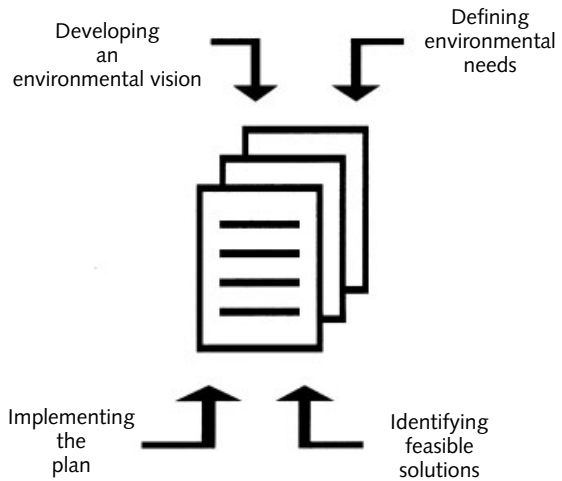


Fig. 3.3 Features of the plan formulation process.

Table 3.8 Questions that characterize place.

Who makes up the population?
What is unique and important about the planning area (socially, culturally, historically)?
What are the strengths and weaknesses of the local economy?
What are the important characteristics of the natural environment?

vision takes shape in response to a series of questions that focus the goal-setting process. Examples of questions that may be posed during this phase include:

- **What features characterize the planning area?** This simple question addresses several issues related to establishing an understanding of place. Examples are given in Table 3.8.
- **What are the community's attitude and values relative to the environment, economic growth, and lifestyle?** Communities have different attitudes toward development: some prize stability and traditional ways of life, while others consider growth and change to be important to community survival. In either case, planners need to understand the extent to which qualities such as environmental preservation, growth, and development are valued by the community.

Table 3.9 Targets of change.

Target	Screening questions
Natural environment	Are there trends in the loss of natural resources that should be reversed? What can be done to protect resources and prevent pollution?
Land use	Is the current mix of land used a good balance? Should some areas be used differently? What trends define the region?
Infrastructure	What level of service should be provided? What is the age and capacity level? Will infrastructure accommodate growth?
Demographics	What are the important demographic trends? What level of growth can be supported?
Economic growth	How will growth influence the quality of life? Is there a need to attract growth? What type of growth is desired?
Community concerns	Are there health or risk issues that need to be addressed? How does public health compare to other regions?

- *What changes or improvements within the community are desirable?* Here, a range of possible areas of change may be examined and opinion may be elicited for each. A selection of those pertinent to environmental planning is provided in Table 3.9.

Defining community needs

The answers obtained from the questions relating to the community’s environmental vision begin to focus on specific needs. Need, in this context, explains those features of the environment that are of greatest concern. Crystallizing an understanding of need and expressing need as a geographic feature of the planning area requires the planner to:

- Establish the boundaries of the environmental planning area.

Table 3.10 Approaches used to define boundaries.

Town or village boundaries
Service area boundaries
Special districts
County boundaries
Physical characteristics

- Review the environmental regulations that affect the planning area.
- Identify the environmental problems that threaten environmental quality.
- Evaluate the effectiveness of existing environmental management facilities and infrastructure.

Bounding the planning area Delineating the planning area concentrates efforts on including problem areas that have actual or potential public-health and ecological impacts, critical resource areas that serve the community and require protection and preservation, and facilities used to protect public-health or environmental qualities. Boundaries can be defined in several ways. Some of the more common methods are outlined in Table 3.10.

Existing environmental regulations There are numerous state and federal regulations aimed at an array of environmental factors. These regulations can influence and help define key environmental needs. In fact, not only will these regulations help identify environmental issues that must be incorporated into the plan, but they also define standards and compliance measures that if not addressed may result in fines and penalties. Table 3.11 describes regulations that can be used to address best management practices in the plan.

Identifying existing environmental problems This step in defining need concerns efforts to devise a listing of any and all environmental problems that represent serious threats to health and ecosystems in the planning area. Possible threats may include unsafe drinking water, specific pollutants or pollution sources, or natural resources that may be affected by pollution. An sample list is shown in Table 3.12. Critical to compiling this list is the

Table 3.11 US environmental regulations to address management practice.

Drinking water quality	Safe Drinking Water Act
Wastewater treatment	The Clean Water Act of 1977
Wetlands protection	Clean Water Act – Section 404 Food Security Act – Swampbuster Section
Nonpoint source pollution	National Nonpoint Source Program Clean Water Act
Solid waste management	Resource Conservation and Recovery Act
Hazardous waste management	Resource Conservation and Recovery Act
Emergency response to hazardous substances	Emergency Planning and Community Right to Know Act (SARA Title III)
Asbestos-containing materials	Asbestos Hazard Emergency Response Act
Radon gas	Indoor Radon Abatement Act
Air pollution	Clean Air Act

Table 3.12 Environmental problems checklist.

Air quality
Asbestos in buildings
Chemical hazards/releases/spills
Drinking-water quality
Ecosystem/habitat quality
Flood hazard
Hazardous waste sites
Nonpoint pollution
Pesticides
Radon
Solid waste
Surface water
Underground storage tanks
Wellhead/watershed protection
Wetlands

planner's ability to assess the level of risk each item may represent in relation to environmental quality. A series of screening questions can be used to help define risk and highlight problems that may require more detailed investigation. Examples may include:

- What harmful effects can the substance or activity cause to human health or ecosystem functioning?
- Are these effects permanent or reversible?

- What are the effects of different levels of exposure?
- To what degree is the local population or ecosystem exposed to the substance or activity in question?
- Is there presently any evidence of harm to human health or ecosystem functioning as a consequence of exposure?
- What are the known concentrations of the substance in critical receptors?

Effectiveness of existing facilities An important step in identifying need involves the critical evaluation of the community's environmental facilities. Here, consideration is given to facilities such as landfills, incinerators, transfer stations, recycling centers, water treatment plants, wells, wastewater collection and treatment centers, as well as buffer zones, wet ponds, and swales for runoff management. The purpose of this review is to determine whether a facility is performing effectively and is capable of meeting present and future demand. Inadequate performance may indicate that operations may be functioning beyond carrying capacity and require modification. Therefore, evaluating facility performance helps to (1) identify potential risks and (2) determine whether the community is in compliance with local, state, or federal regulations. A series of screening questions to help review facility adequacy is given in Table 3.13.

Following the careful definition of community need and after the environmental vision of the community has been refined, attention can shift to the consideration of possible solutions and strategies for enhancing environmental quality. The list of possible solutions and their integration into the comprehensive environmental plan is examined in the sections to follow.

Identifying environmental solutions

There are a variety of options for achieving environmental goals. To determine which if any are suitable to the given problem, information is needed in order to ascertain

- What each solution can achieve.
- What factors limit a solution's effectiveness.
- What the costs associated with the solution are.

Table 3.13 Facility effectiveness screening questions.

Design concerns

- Is the plant design adequate for the existing demand?
- Will it accommodate future demand?
- Does the facility meet requirements of current regulations?
- Are maintenance problems increasing?

Management concerns

- Is management clear about the system's goals?
- Have managers evaluated present and future levels of service?
- Is the facility adequately staffed?
- Does the staff understand their responsibilities?
- Are the revenues generated sufficient to meet current service demands?
- Are funds being set aside for improvements and expansions?

Operational concerns

- Are facilities operating at or near capacity?
- Can the facility adjust to changes in input type and quantity?
- Are mechanisms that control processes in good operation?
- Have potential hazards been identified?
- Have operating procedures been updated?
- Are good records kept?

Table 3.14 Planning solutions to common environmental problems.

Environmental concern	Solution alternative
Drinking-water quality	Protecting the source Improving treatment technologies Point of use/point of entry fixes
Drinking-water quantity	Conservation Leak detection Identifying new supply sources
Wastewater treatment	Use of onsite systems Cluster systems Centralized systems
Solid waste	Source reduction, recycling, composting
Hazardous waste	Household hazardous waste collection programs
Nonpoint pollution	Identifying sources Developing management strategies Educating the community

- How the solution can be implemented.
- Whether the solution will affect or contribute to other environmental problems.
- Whether the solution will foreclose on future options.

With preliminary answers to these questions, a list of generic options for key environmental issues confronting the planning area can be created. Options can be eliminated based on their degree of feasibility, but no reasonable option is omitted from consideration. For example, options may be eliminated that will not work because of situations specific to the planning area. These may include:

- 1 population/demographic characteristics
- 2 distance constraints
- 3 local hydrography/topography
- 4 soil and geologic conditions
- 5 environmental chemistry.

Options may also be eliminated due to cost considerations. Cost may be defined simply as a matter of economic factors, although other expressions of cost should be examined (i.e. social costs, ecological costs, health-related costs). Finally, options may be eliminated because they require

advanced technical skills beyond that which can be accessed in the community, or because they are too complicated to be administered successfully.

After a list of possible options has been reduced to a more feasible set, the planner must review each and clarify precisely what each solution will achieve. During this review and evaluation, several of the remaining solutions may be rejected. The strategy to remain focused on is to never remove a potential solution without an assessment of its performance capabilities. In many situations it may be necessary to employ a combination of solutions, and frequently different solutions can complement one another and net an overall greater benefit. A list of generic solutions arranged by environmental issue is present in Table 3.14.

Prioritizing objectives

One of the more critical steps in developing a comprehensive environmental plan involves the task of targeting the most important problems that it should address. While this sounds comparatively straightforward, setting priorities requires a will-

ingness to trade-off development objectives such as attracting businesses into the community or promoting tourism for those related to environmental quality. A simple means of establishing a ranking of objectives places each problem into a subjective categorization based on relative risk:

- 1 **Urgent** – identifying those environmental problems that present the highest risk to human health.
- 2 **Necessary** – defining problems with lower levels of risk and where regulatory violations exist.
- 3 **Desirable** – describing problems that present no regulatory concern and exhibit low levels of long-term risk.

Once the major objectives have been selected and priorities established, the plan can be formalized into a detailed statement of the community's environmental vision. The planning process can now shift focus to consider the issue of implementation. Implementation is the mechanism whereby the plan can be put into action, its performance evaluated, and its focus revised as conditions and needs change.

Plan implementation

The most carefully crafted plan may never achieve its designed effect simply because it lacked a strategy for implementation. For example, a plan for a highway bypass to reduce traffic congestion through a town generally requires selecting a route, purchasing right of way, conducting environmental reviews, designing the highway, planning for construction, and acquiring funding. To implement this plan requires a strategy to ensure that everything takes place in the sequence necessary to produce success. In this sense implementation explains a set of procedures that can be used to put our environmental plan into practice. A general outline detailing one possible strategy to guide implementation has been offered by Anderson (1995). This procedure consists of ten steps (see Fig. 3.4):

- 1 Review the goals, policies, and recommended actions in the plan to identify:

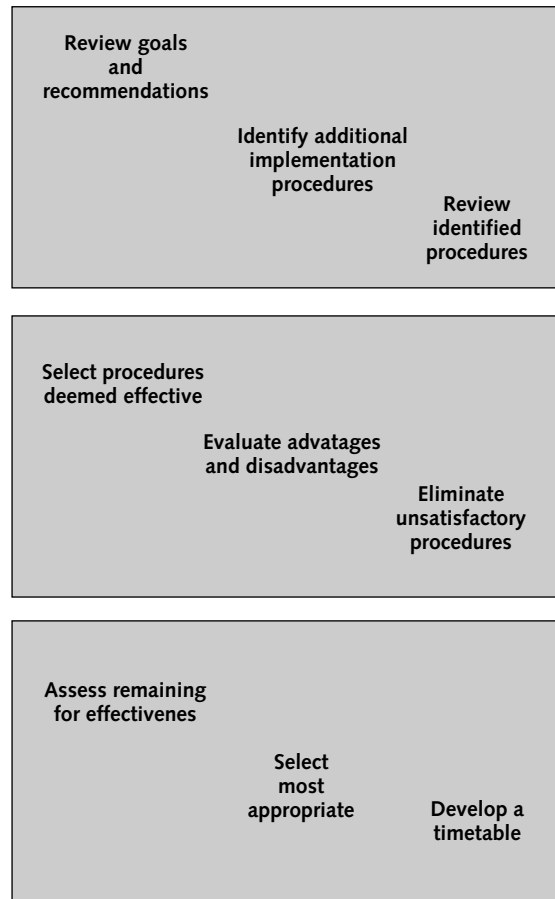


Fig. 3.4 Guidelines for plan implementation.

- those with satisfactory procedures already in place that can guide implementation.
 - those which cannot be implemented presently due to their general nature.
 - those which should not be implemented at present due to legislative, economic, political, or technical constraints.
 - those which will require new or revised implementation procedures.
- 2 Identify possible additional plan-implementing procedures that can be reasonably entertained.
 - 3 Conduct a preliminary review of the procedures identified.
 - 4 Select procedures that will produce desired and effective results.

- 5 Evaluate the potential procedures, soliciting comments on their relative advantages and disadvantages.
- 6 Eliminate procedures that are considered ineffective, politically unacceptable, too complex, or too costly to institute and administer.
- 7 Prepare an analysis of the remaining procedures to ascertain:
 - what the objectives of the program are.
 - how effective the program will be.
 - what the administrative requirements are.
 - who would be adversely affected by the program.
 - what the probable benefits of the program are.
 - what legal steps are required to enact and administer the program.
- 8 Review the findings from Step 7.
- 9 Select those procedures that appear to be the most appropriate.
- 10 Develop a timetable for the introduction, adoption, and administration of the selected procedures.

Because long-range environmental plans are general and in some instances purposely non-specific, not all plan implementation programs are suitable for use without some modification. A generalized set of instructions for implementing long-range comprehensive environmental plans would give emphasis to (after Anderson, 1995):

- Selecting and using those plan-implementing measures that are clearly suitable to chart a course of change over a 20-year period.
- Preparing short-range programs that are specific enough to guide change using 5-year increments.
- Implementing short-range programs using procedures suitable for the immediate future.

Implementation methods and measures

There are two broad categories of action that can be taken to implement programs and policies expressed in a plan (Levy, 1997): (1) public capital

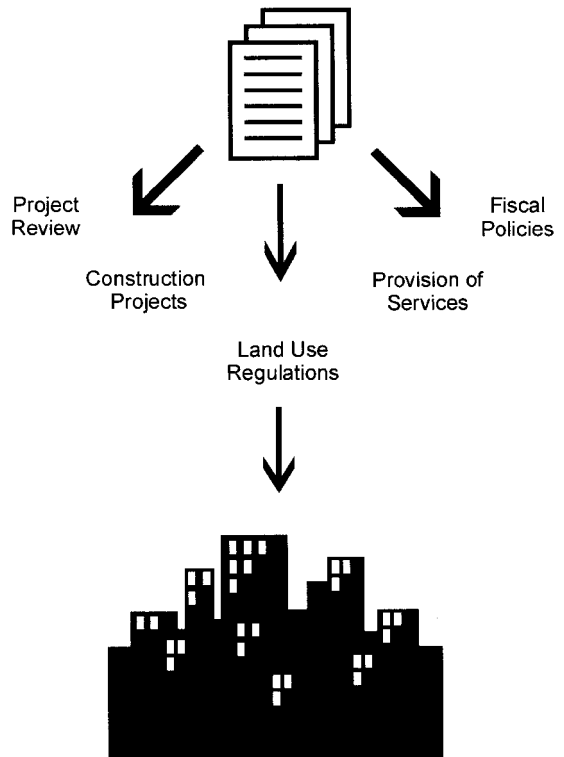


Fig. 3.5 Tools for plan implementation.

investment, or (2) public-control land utilization. From either of these two directions, several types of plan implementation programs can be developed (Fig. 3.5). Examples may include

- Construction of physical facilities
- Provision of services
- Regulation of land use and development
- Project review
- Fiscal policies.

Programs, such as zoning ordinances and subdivision regulations, are the traditional tools of the planner; however, a wider mix of programs is more typical. Examples of these broader strategies can include public land acquisition programs, housing and development programs, redevelopment, capital improvement programs, and the use of transferable development rights. For instance, when the plan to implement the Mid-Peninsula Regional Open Space District was undertaken in California, a public land acquisition program was one strategy used to realize the goal of providing access to open space. Several of the more com-

Table 3.15 Land-use factors subject to zoning.

Type of land use
Activities permitted on private properties per land-use type
Minimum lot size
The physical placement and spacing of structures
Maximum percent of lot covered by structure
Maximum building height
Amount and design of offstreet parking
Design of structures and sites
Minimum/maximum floor area
Permitted noise levels
Design review

monly used implementation tools are described below. A more detailed treatment of these methods can be found in Kelly and Becker (2000), Levy (1997), and Anderson (1995).

1 Public regulatory/land-use controls Zoning defines the delineation of the planning area into districts and the establishment of regulations within these districts to control the type, density, spacing, and placement of permitted land uses. Zoning ordinances typically include provisions that regulate site layout, structural characteristics or buildings, and procedural actions pertaining to compliance and zoning appeals. A general listing of the land-use factors subject to zoning control is provided in Table 3.15. As a form of control, zoning is an attempt to avoid disruptive land-use patterns and prevent the location of activities within districts that may generate external effects that may be detrimental to existing or future land uses. The concept of zoning can be extended to include the regulation of uses that may impose significant environmental risks or describe conditions that are environmentally incompatible.

Subdivision regulations define any ordinance adopted or administered by local government which regulates the division of land into two or more lots, tracts, or parcels for the purpose of sale, lease, or development. Subdivision regulations give communities power to ensure that new residential development meets community standards and complements the goals and objectives of the comprehensive plan. A subdivision ordinance will specify the administrative procedures to be followed in the division of land, design stan-

dards that must be adhered to, and identify the improvements that must be installed such as streets and utilities. The ordinance will also regulate the manner by which parcels of land may be converted into building lots, and stipulate which improvements must be made before building lots can be sold or building permits granted. Ideally, subdivision regulations are designed to meet several purposes, and while most are targeted toward residential development, many of the same concepts and controls can be used to govern commercial and industrial subdivisions as well.

Growth management programs describe programs prepared, adopted and administered by local government that are designed to regulate: (1) the amount of urban growth, (2) the rate of urban growth, (3) the type of growth, and (4) the location and quality of growth. Perhaps the most well known growth management program was that used by the city of Petaluma, California, nearly three decades ago. Such programs are intended to discourage or severely constrain unwanted urban development, particularly in situations where growth would:

- 1 Change the characteristics of the community.
- 2 Be detrimental to the economic base of the planning area.
- 3 Generate loads that would strain or exceed carrying capacities.
- 4 Produce adverse secondary environmental impacts.

Design review describes procedures developed to facilitate the review of proposed building designs and regulate the site and structural characteristics. In most cases, review focuses on the physical design of individual structures, historic districts, office parks, and industrial sites for individual buildings or groups of buildings.

Impact assessment reports explain a set of procedures followed to analyze and disclose the potential effects of a proposed action or project on the local environmental system. Impact reports may concern purely environmental consequences or they may be broadened to include social, economic, and fiscal impacts of the action as well. In each case the purpose of assessment is to identify the potential short-term impacts of a proposed project so that an informed decision concerning

the adverse and beneficial effects of an action can be made. The assessment procedure followed is intended to: (1) identify all relevant adverse and beneficial effects, (2) identify mitigation measures that would reduce adverse effects, and (3) identify alternatives to the proposed action (Canter, 1996).

2 Public capital investment programs It may be argued that accessibility is the main determinant of the development potential and value of land (Levy, 1997). The nature of accessibility to the landscape and the value of land are heavily influenced and shaped by public investment in critical infrastructure. Public investment in infrastructure may take many forms, but most typically the term applies to government provision of roads, parking facilities, sewer and water lines, and related facilities. Indeed, one of the more useful means a community has to direct its growth is by investment (or unwillingness to invest) in road construction, sewer lines, and water hook-ups. Public investment programs can include a variety of instruments used by government to extend or withhold infrastructure improvements within the planning area. Examples include the following.

Public construction projects are sponsored by a public agency and designed to create or improve roads, transit systems, public buildings, or water and sewage systems.

Public land acquisition programs explain the purchase of land in fee simple or the purchase of limited rights to land in order to: (1) make a site available for full public access and use, or (2) acquire limited rights to property such as water rights for lands draining into a reservoir, development rights for open space districts, or air rights for land adjacent to airports.

Economic development programs define activities intended to generate wealth by mobilizing human, physical, natural, or other capital resources to produce marketable goods and services. Such programs attempt to foster economic growth, provide employment opportunities, and develop a strong tax base through the creation of mechanisms to (1) retain existing businesses and industries, (2) attract businesses, (3) nurture small businesses, and (4) develop facilities that capture businesses.

Housing programs are created to provide housing for residents within the planning area by implementing policies, strategies, and proposals that encourage (1) occupancy by the type of occupant, (2) occupancy by the income of occupant, (3) need-appropriate housing types, (4) home ownership, and (5) alternate patterns of location.

Transferable development rights define the transfer by sale or barter of some or all of the right to develop a parcel of land located in one district to a parcel of land located somewhere else in the planning area. The concept of transferring rights to development has been used to allow the sale of (1) "air rights" over historic areas and buildings as a preservation measure and, (2) development rights in rural areas where development is unwanted.

Plan evaluation

Do plans work? This and a series of interesting questions have been raised by Talen (1996) on the topic of plan evaluation. Since the success of plan-making can be determined only at some future point in time, the question as to how planners evaluate whether or not the plans they create are actually implemented or whether their plans ever achieve their desired objectives is anything but trivial. Evaluation in planning, however, is complex, and embodies a variety of instruments and methodologies (Talen, 1996). To help distinguish between the evaluation of plans and other types of evaluation undertaken in planning, we can separate the concept into four main categories (Talen, 1996):

- 1 Evaluation prior to plan implementation.
- 2 Evaluation of planning practice.
- 3 Policy implementation analysis.
- 4 Evaluation of the implementation of plans.

According to this outline, category 4 defines those procedures and instruments that focus on the question of implementation. Here, evaluating how well the plan is working can follow either of two paths:

a) Qualitative approaches – these methods and instruments employ evaluative mechanisms that are subjective and selective in nature. An example

might be the annual review of building permits to see how well the permit process agrees with provisions in the plan to encourage more multifamily housing. By looking at the pattern a judgment can be made as to whether the community is reaching this goal. Using this approach, evaluative criteria can be compared against objective indicators of success, such as levels of economic well-being or related ideas.

b) Quantitative approaches – are methods that rely on empirical investigations and quantitative support to determine the success of a plan. Examples of this approach may include the systematic sampling of key water quality indicators downstream from the municipal sewage treatment facility to see if investments made in new water-treatment technology have led to improved water quality. Two general approaches have been found to be useful in this regard: (1) the use of map overlays to quantify the level of agreement between the actual form of development and what may have been suggested in the plan, and (2) the use of inventories to document measurable relationships between attributes used to characterize aspects of the planning area (Alterman & Hill, 1978; Calkins, 1979). Additional approaches to quantitative plan evaluation have been presented by Bryson (1990), and Kartez and Lindell (1987). Most of these methods use regression-based approaches to establish the degree of fit or correlation between actual outcomes and those specified in the plan. In the method described by Bryson (1990), success of outcome is subjectively scaled, as are the explanatory variables used to evaluate implementation. Using these scores, the results of the regression model present the relationship between goal achievement and (1) successful problem identification, (2) conflict resolution, and (3) impact on resource allocation.

The methods reviewed above suggest that for evaluation to be successful, evaluative criteria must be carefully selected and defined. Useful evaluative criteria are those attributes of the planning area or problems that can support the detection and measurement of change, provide a means to define success, facilitate the analysis and treat-

ment of issues of multicausality, and illuminate expected outputs. Above all, since plans are formulated with the intent of being implemented, an evaluative component must be part of the planning process to provide feedback as to how well the process is working. The key to integrating a dynamic evaluation component into the plan rests on the planner's ability to (1) incorporate evaluative methods explicitly, and (2) provide a means to measure the achievement of each goal as an integral part of the plan. As Talen (1996) maintains, once planners know what elements of plans are successfully implemented and what elements are not, they can move quickly to the next tier of evaluation. This aspect of evaluation directs efforts toward the identification of the underlying factors associated with successful plan implementation and where things went wrong. Systematic failure to meet the goals expressed in a plan may indicate that the community is pursuing the wrong goals (Talen, 1996).

Summary

Planning becomes embodied in a plan. The nature of that plan was described in this chapter. Specifically, the plan, defining the goals, objectives, and policy recommendations of the planning area, was examined as both a physical document with clearly identified elements that frame community aspirations, and as a program for the future that describes a future state of the region and how its arrangement will take form. In either regard, plans contain information. The type of information required and how this information is presented was reviewed. However, a plan will never achieve its goals unless it can be implemented. In this chapter the basic mechanisms available to implement plans were examined and the larger question of evaluating the success of a plan was discussed.

Focusing questions

How might the time horizon established for a plan influence its success?

Describe the intellectual tools needed to draft and produce a working plan.

Discuss the role of citizen participation in the plan-making process.

Explain three important functions a plan is designed to fulfill.

Discuss the use of projection and forecasting tools in plan design and analysis.