

developing environmental programs

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Introduction

During the decade of 1960-70, the American people became generally aware of our environmental problems. This consciousness raising was accomplished by groups other than professional educators. The somewhat unprofessional and often rhetorical nature of the environmental movement aroused opposition from some Extension personnel. Extension traditionally has taken the view of resource conservation as "wise use," whereas many of the environmental groups have had an overtone of overly simplistic preservationism. Conflicts between new environmental agency personnel and the production agriculture-oriented Extension haven't been uncommon. These controversies led to extensive research efforts by Agricultural Experiment Stations, USDA, EPA, and others to define the complexity and extent of the environmental problems.

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The educational programs needed now aren't of the awareness-arousing nature. Rather, programs to prevent environmental degradation by day-to-day decision making are needed. Application of our newly acquired understanding of the dynamics of resource systems can aid in solving land use and pollution problems.

Extension is ideally suited to this pursuit. Increased requests for Extension aid in environmental impact problems indicates that environmental groups and the regulatory agencies can't perform this educational function.

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Programs that allow informed people to make decisions based on state-of-the-art knowledge are needed. Local decision makers must be capable of applying technology to specific problem solving and of defining areas where the necessary knowledge is lacking.

Many decisions affecting the environment are made on a local basis and appear to have only local impact such as zoning and property taxation decisions. But synergistic relationships are common when these decisions aren't based on the capability of resources to support the resource use decision.

This article outlines the major elements involved in a continuing environmental program. The ideas and priorities are the results of efforts to plan and institute land-use education programs in Connecticut, a rapidly urbanizing state.

Program Elements

The diagram in Figure 1 summarizes the basic information flow relationships discussed in the following sections. Figure 1 starts with the wide range of environmental decision-making materials and methods that are available. This information is the subject-matter input to continual education programs for the audiences shown. Feedback and periodic evaluation of the education programs should continually point out new information needs of the audiences. The new

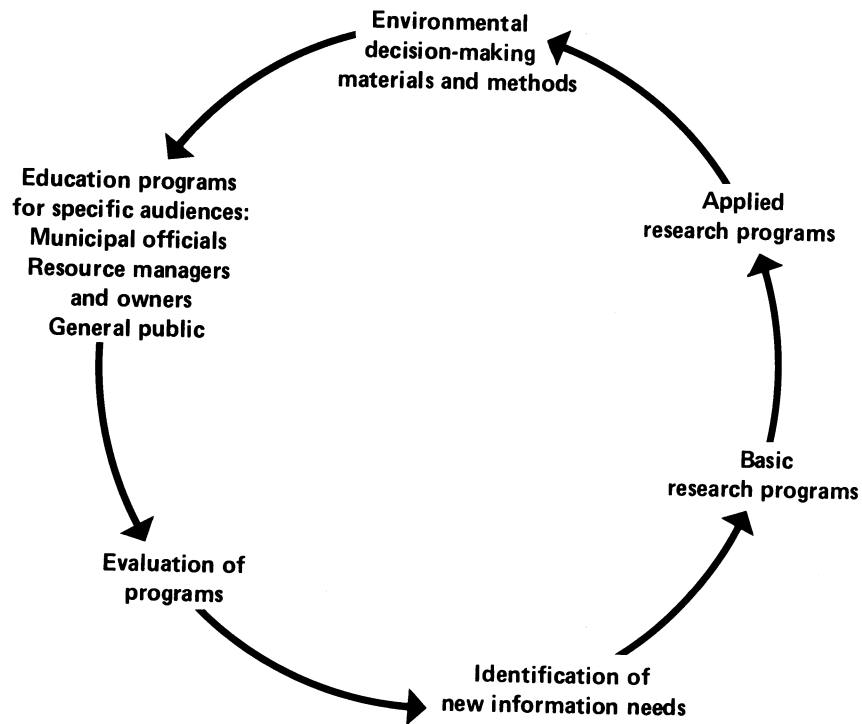


Figure 1. Information flow between environmental program elements.

information needs should be a major input into the priorities of ongoing research efforts determining the interaction between developments and the resource systems that make up the human environment.

As the basic relationships are defined, applied research programs are needed to design developments and arrange land uses to minimize detrimental effects and enhance human amenities. Design criteria from the research programs are then used to update the environmental decision-making materials and methods.

The flow of information cycle must be closed as shown in Figure 1 with constant feedback of new needs and knowledge to ongoing education programs.

Audiences

An environmental program needs to be audience-oriented. It must be flexible in both breadth and depth of subject matter to meet the specific needs of the audiences.

Three audiences must be educated if the decision-making process is to be moved from the courts to the planning process. These are local government officials, resource owners and developers, and the general public. The subject-matter needs of each audience are essentially the same, but the educational programs and depth of knowledge differs.

Local Governmental Officials. This audience is local government and municipal officials (planning and zoning boards, town councils, county commissioners) who establish and enforce land-use regulations.

This audience must avoid delayed costs and later environmental problems when they make local land- and water-use decisions such as the location and design of a subdivision, shopping center, or sanitary landfill site. These decisions should be based on the abilities of the sites to support the proposed uses. Considerable natural resource information can be available to help in these decisions. Several obstacles are encountered by lay people when they try to get and use natural resource data. In most cases, considerable professional skill is required because the data aren't readily usable by lay people. Much of the information can be reworked into an understandable format.

Because of a rapid turnover of these officials, a continuing education program is necessary. The program should: (1) summarize the environmental information available, (2) help officials understand the information and its implications, and (3) aid them in implementing programs or changes that will

ensure the land will be developed in a manner that preserves its unique and desirable features.

The program should be repeated biannually and be revised as new information becomes available. It must be individualized to each geographic and political unit.

In Connecticut, the CES and the Connecticut Department of Environmental Protection (DEP) have a joint program to serve this audience. They've had a series of workshops to train local government officials to develop, understand, and use natural resource information in making intelligent land-use decisions. In these workshops, for four sessions, participants from each municipality work together with materials and data for their area.

The first session is a summary of the natural resource data available. The basic sources of natural resource data, topography, bedrock and surficial geology, hydrology, soils, and land use are described and problems with their use are discussed.

The next sessions deal with interpreting the data. From basic resource maps and accompanying data, single-factor maps are derived to delineate areas with common characteristics. Included are steep slopes, bedrock at shallow depths, high water tables, flooding, availability of ground-water supply, and land use.

Environmental problems are so broad that cooperation with other agencies is essential in gathering and organizing resource information so it can be presented to and used by local decision makers. . . .

The last session consists of exercises using the materials developed. Exercises are conducted to identify areas in each participant's town with favorable or unfavorable characteristics for a variety of uses such as sanitary landfills, on-site disposal of septic tank effluent, or transportation and public utility corridors.

This series has now been offered to 169 Connecticut towns. An evaluation of the effects of the program is being conducted. Preliminary results indicate a need to offer the workshops for new officials on a continuing basis. Also, more in-depth technical sessions are being planned for officials who attended the initial series.

Resource Managers, Developers, and Owners. A number of individual groups in this classification (such as the lumber-

ing industry, building industry, real estate industry, planning and environmental consultants, and legal consultants) can be separated for specific programs. In urban situations, they are often the same individuals.

Specific educational goals are similar to the municipal officials. This audience needs to know the data that are available and how to use them to avoid costly environmental and economic mistakes.

Knowledge of natural systems is rapidly increasing. Federal and state agencies (Environmental Protection Agency, the Connecticut DEP) set the overall environmental standards, and change their regulations as new information becomes available. This means regulations controlling development and management practices are revised about every five years. These revisions cause frustrations with, and backlash against, environmental regulations by various trade and development groups. Therefore, in addition to natural resource information, this program must help participants learn how to maintain up-to-date information on current regulations, as well as how to comply with them.

An attempt to combine regulations information and basic, environmentally sound, land development principles has been completed in Connecticut's *Developer's Handbook*.¹ An education workshop is now being planned for housing developers, which will use the handbook as a basic text.

Specific subject-matter programs will vary with individuals in this group. For example, professional resource managers and owners in agriculture, forestry, range and recreation enterprises, require highly technical subject matter on improved environmental technology and practices. However, developers and real estate people need to know how to use natural resource information to plan their developments and investments compatible with current and future environmental standards.

The General Public. This is the audience that most environmental groups, newspaper editors, and government agencies direct their efforts toward. It's not likely Extension could reach this audience with awareness-type information anymore effectively than these groups are reaching it. Thus, organized programs for general public education are probably not desirable at this time. The environmental role for Extension should essentially be one of responding to requests by making available detailed, unbiased facts and avoiding public controversies over environmental problems.

Feedback and Research

Traditionally, Extension has been closely allied with Agricultural Experiment Stations. Problems noted in the field by agents and specialists that require research answers are fed back to the experiment station personnel. As research is completed, Extension keeps their cooperators informed of the new data.

Maintaining this type of feedback mechanism and relationship is essential in environmental programs. The number of practical problems for which there are no firm answers is growing. There are large bodies of basic resource system information that might shed some light on specific problems. The information is very seldom in a form that can be translated into techniques for the decision makers.

An example in Connecticut is the problem of the proper density of septic tanks in a rural development. There's a large body of knowledge on soils and microbiology, but the actual volume of a specific soil type necessary to take up the nutrients from the sewage from a specific number of people over a long period of time isn't known. In other words, research needs to be done to determine the ability of specific soils to renovate the lechate before the engineering design decisions are made.

It's essential that Extension influence both basic and applied research programs to ensure the results are in a form that's applicable to new problems.

Environmental research is time-consuming and the problems are immediate. The questions raised by practical problems need immediate solutions. Therefore, the problem-solving community resource development (CRD) approach must be flexible enough to apply present knowledge so decisions leave adequate margins for errors in our physical and biological knowledge. Then, as the gaps are filled and assurance is available that the decision won't be making unknown environmental or economic tradeoffs, the margin can be eliminated.

An example of environmental decisions leaving "margins for error" is the wetlands protection legislation in a number of states. In spite of the fact that the functional roles of wetlands can't be quantified, or even defined, there's enough evidence to know they're part of several basic physical and biological systems. And, it's suspected that their loss will be important. Therefore, they're being protected until the consequences of their loss are known.

Agency Cooperation

Environmental problems are so broad that cooperation with other agencies is essential in gathering and organizing resource information so it can be presented to and used by

local decision makers. The agencies involved in Connecticut are the Cooperative Extension Service, the U.S. Geological Survey, the U.S. Soil Conservation Service, the Connecticut Water Resources Institute, Agriculture Experiment Stations, University Research Foundation, the Connecticut Department of Environmental Protection, the Connecticut Department of Health, Regional Planning Agencies, and Community Officials. Similar lists can be compiled for other states.

Environmental programs of a cooperative nature *can be* most successful as demonstrated by the accomplishments of the interdisciplinary, interagency Environmental Review Team in Connecticut. The team has performed over 80 on-site reviews of proposed developments.² But cooperative programs are difficult to maintain due to apparent competition for clientele among many of the agencies, especially those that need local and state level political support to survive. Therefore, to accomplish the needed cooperation Extension has to be willing to give the major share of public credit to other agencies.

Summary

Attempts to plan and implement an environmentally sound land-use education program in Connecticut have defined some of the elements necessary to "noncrisis-oriented" programs. The primary audiences should be local government decision makers, land managers, developers, and owners. The programs should be continual and periodically updated to present state-of-the-art information. Close cooperation with research programs is necessary to ensure new information developed is applicable to the practical problems of the audiences. Also, interagency cooperation is needed for a successful program.

Footnotes

1. Allen Carroll, *Developer's Handbook* (Hartford, Conn: Department of Environmental Protection, Coastal Area Management Program, 1975).
2. Details and evaluations of the program are given in David R. Miller and Hugo F. Thomas, *The Eastern Connecticut Resource Conservation and Development Report on the Environmental Review Team Evaluation of Land-Use Proposals*, Cooperative Extension Service Bulletin EC73-37 (Storrs: University of Connecticut, College of Agriculture and Natural Resources, 1973) and David R. Miller and Hugo F. Thomas, "Land-Use Planning: Interdisciplinary Teams Aids On-Site Environmental Impact Evaluation for Rural Development Proposals in Connecticut," *Journal of Forestry*, LXXII (No. 4) 224-26.