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IMPLEMENTATION OF THE 1974 FOREST SERVICE RESOURCE PLANNING ACT

AN ECONOMIST'S VIEWPOINT<sup>1/</sup>

By

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In August 1974, Public Law 93-378 (hereinafter referred to as the Resource Planning Act--RPA) was signed into law by the President of the United States. From this economist's viewpoint, it is the most significant legislation passed regarding the management of our National Forests since they were established at the turn of the century. For the first time there is a legislative mandate requiring managers of our National Forests to justify their investments. The Multiple Use Act of 1960 indicated that the "National Forests should be managed in that combination that best meets the needs of the American people," but the procedures for evaluating the attainment of that goal were not specified until RPA was passed.

Throughout the 19th century, the resources of this country were viewed as obstacles to be conquered, and consequently many were wasted and misused. The Conservation Movement that began in the late 1800's was a reaction to this waste and a realization that our resources were not inexhaustible. Passage of the Creative Act of 1891, which marked

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the beginning of the U.S. Forest Service, was one product of the conservation movement. Before doing a literature review for this paper, I had assumed that the conservation movement was primarily concerned with stopping exploitation and reserving natural resources for future generations. Gifford Pinchot, a leader in the conservation movement, and first Chief of the Forest Service when it was transferred from the Interior Department to the Agriculture Department in 1905, had a much broader view of conservation. Three quotations from his book "Fight for Conservation" (1910) illustrate this broader view.

Conservation demands the welfare of this generation first, and afterward the welfare of the generations to follow. There may be just as much waste in neglecting the development and use of certain natural resources as there is in their destruction (p. 42 and 43).

The question of efficiency in public office has been brought to the front as never before in the history of the Nation. What we lack is the tradition of high efficiency that makes great enterprises succeed. The national housekeeping, the government's vast machinery, should be the cleanest, the most effective, and the best in methods and men (p. 92 and 93).

The American people have evidently made up their minds that our natural resources must be conserved. That is good, but it settles only half the question. For whose benefit shall they be conserved -- for the benefit of the many, or for the use and profit of the few? (p. 109).

These quotations address the questions of current use, efficiency, and who is receiving the benefits of the National Forests. Before the Resource Planning Act was passed, these concerns were not adequately handled in legislative mandates.

In the early years of the Forest Service, the primary assignment of forest rangers was stopping exploitation by bringing timber harvesting

and grazing into balance with what nature could provide. Over its 70-year history, however, there has been increased emphasis on investment to better protect the forest and range resources and to improve their productive capacity. Several acts have been passed by Congress granting this authority. Examples of protection investments are fire prevention and suppression, insect and disease control, watershed rehabilitation, water pollution abatement, and protecting wild horses and burros. Examples of investments to increase production and use of the forests are precommercial thinning, reforestation, road construction, and installation of recreation facilities, fences, and water improvements.

Three provisions of RPA are discussed in this paper.

### 1. Resource Assessment

In 1975 and every decade thereafter starting with 1980, the Secretary of Agriculture is directed to prepare an assessment of renewable natural resources on all public and private forest and rangelands. This assessment should include:

(1) An analysis of present and anticipated uses, demand for and supply of the renewable resources, with consideration of the international resource situation, and an emphasis of pertinent supply and demand and price relationship trends;

(2) an inventory, based on information developed by the Forest Service and other Federal agencies, of present and potential renewable resources, and an evaluation of opportunities for improving their yield of tangible and intangible goods and services, together with estimates of investment costs.

### 2. Resource Programs

Based on the assessment information and policy input, a program must be prepared for the same time periods with an internal update every

5 years. The program should project at least four decades in the future:

(1) An inventory of specific needs and opportunities for both public and private program investments. The inventory shall differentiate between activities which are of a capital nature and those which are of an operational nature;

(2) specific identification of Program outputs, results anticipated, and benefits associated with investments in such a manner that the anticipated costs can be directly compared with the total related benefits;

(3) a discussion of priorities for accomplishment of inventoried Program opportunities, with specified costs, outputs, results, and benefits; and

(4) a detailed study of personnel requirements as needed to satisfy existing and ongoing programs.

### 3. Annual Report

To determine whether the program is being carried out as planned, the Act calls for an annual evaluation report.

For the purpose of providing information that will aid Congress in its oversight responsibilities and improve the accountability of agency expenditures and activities, the Secretary of Agriculture shall prepare an annual report which evaluates the component elements of the Program required to be prepared by section 3 of this Act (Resource Program) which shall be furnished to the Congress at the time of submission of the annual fiscal budget commencing with the third fiscal year after the enactment of this Act.

Requirements of the Act that will not be discussed include elimination of management backlogs (e.g., watershed rehabilitation) by the year 2000, elimination of purchaser credit for roads, expansion of resource surveys, and encouragement of more cooperation with State and local communities.

The Resource Planning Act applies to all programs administered by the Forest Service, U.S. Department of Agriculture. The Forest Service consists of three main branches--National Forest Systems (NFS), Research, and State & Private Forestry. This paper will only discuss the implementation of RPA for NFS. The National Forest System consists of 187 million acres that are separated into nine regions made up of 155 Forests, 125 Wilderness Areas, and 19 National Grasslands. The Forest Service manages 18 percent of the commercial timberland and 14 percent of the rangeland in the United States. Over 85 percent of this land is in the West--including Alaska.

There is a reluctance on the part of some forest managers to use economic analytical techniques for evaluating management priorities. If the traditional profit approach is used, there is justification for that reluctance. However, if the analytical approach is oriented to multidemand, i.e., considers the demand for both market and nonmarket goods and services, a good analysis can help clarify the issues. Determining how people are affected by forest roads that pollute streams is just as valid a demand question as the demand for the timber hauled over that road.

There are two main objectives of this paper: (1) Show that demand analysis can be incorporated into decisionmaking on our National Forests and (2) that output indicators of some form can be developed for all investments that relate to how people are affected now or in the future by those investments.

## Implementation of RPA

The Forest Service released draft documents in August 1975 for review by the public; revisions will become the 1975 report to Congress called for in RPA. The procedures discussed in this paper and those being followed by the planning act team are similar, but I will emphasize how society's demands for the forest resources can be incorporated into the planning process. What I am proposing cannot be fully realized in the 1975 report because of insufficient data--especially in regard to output indicators. However, it is important to show how the analysis needs to proceed in order to indicate what the taxpayers are receiving for their investment in public lands.

Figure 1 outlines a suggested flow of activities for resource assessment. On the Demand side, prices should be identified for all commodities and services, available from forest and related lands, that are sold or could be sold in the marketplace. A defensible value can be identified for grazing and timber harvesting because these privileges are inputs into products that are sold in the competitive marketplace. In some parts of the country (particularly the West) water runoff from forested watersheds is fully utilized for municipal, industrial, or agricultural purposes, so a defensible value can also be derived for water in those areas (Kelso, et al.). Recreation opportunities (including hunting and fishing) are generally provided free or for a minimal fee on National Forests, so a willingness to pay value has to be developed. Several studies (Brown, Knetsch, Martin) have identified recreation values, but they all suffer from a lack of validation because they were not arrived at by actual

market transactions. If used properly, however, they can provide useful demand information to the forest manager.

There are several environmental concerns on our National Forests where dollar values do not serve as a good surrogate for demand. A few of these are landscape esthetics, protecting endangered species, and amount of wilderness. It is important, however, that demand for these concerns be expressed as clearly as possible. Using esthetics as an example, a procedure has been developed (Daniel and Boster) which shows relative scenic preferences of different interest groups and what features of the landscape are causing this distinction. The output of this procedure is an index that can be used for comparing the public's relative esthetic preferences for alternative management practices. All concerns of the forest that are real can be expressed in a quantified or qualified way as to how they affect people. We may omit some concerns because of ignorance, but if they are known some meaningful criteria can be developed (O'Connell). Developing demand information for non-market goods and services in other than dollar terms is not easy but it must be done if limited investment dollars are to be spent wisely.

Social well being and political concerns are always important elements of demand. Knowing which industry, business, or household sectors are going to receive the income and employment benefits of a proposed program can often help the manager determine the program's political feasibility. Whether explicitly considered or not, these factors have important implications in the final decision.

Other elements that should be included in the demand analysis are assumptions on population, economic activity, and taste and preferences,



along with an analysis of demands for competing products and a discussion of the international trade picture.

On the Supply side, all forest and related lands must be inventoried so that supply functions can be developed. The inventory should include information on the inherent productivity of the land along with the expected response in increasing levels of investment. The impact of investment on productivity is a critical factor that is not being adequately considered in current land use planning efforts on forested lands. The effect of technology on production from agricultural lands is well known and fully taken into account in planning. As our forest lands are more intensively managed for the goods and services society would like to have from them, investment in technology to increase per acre output will become more important. An example of this activity is how much will the annual growth of timber change when there is thinning, fertilization, or artificial reforestation? Both engineering and dollar cost functions need to be developed for all major investment activities. By engineering, I mean identification of the physical inputs with a minimal separation into labor, equipment, and supplies.

The demand and supply analysis should be done at all three levels of the Forest Service--Forest, Regional, and National--to provide an adequate assessment picture. It should start at the Forest level with uniform guidelines from the top. One obvious reason for this procedure is that personnel at the Forest level better understand the concerns of the local community. Another is that there are some demand and supply questions that are only of local concern. Secondary effects on income

and employment, for example, are important at the Forest level, but at the National level, they are generally offset from one community to another. Most recreation use, to cite another example, is only of local and regional interest. For the 1975 report to Congress, only the National level will be analyzed because of inadequate time, but for the 1980 report there are plans to build it up from the Forest level.

The next major step shown in Figure 1 is the determination of the Forest Service role in meeting National goals in timber, livestock grazing, water runoff, recreation use, and other outputs and uses of the National Forests. This determination is made with the use of the demand and supply analysis and within the laws and policies that govern the management of the National Forests. Until the passage of the Planning Act, the rationale on which the Forest Service role was decided was not based to any significant degree on a demand and supply analysis, but rather on tradition and special interest pressures. These latter two will still be important factors in making these decisions, but with more information available on the general demand for Forest Service outputs and uses, the chances for more equitable decisions is greater-- a concern mentioned several times by Gifford Pinchot (1910, 1946).

After determination of the Forest Service role, it is translated into alternative goal and objective levels. A goal is defined here as a concise statement of a central strategy. It is usually not quantifiable and is timeless. Objectives stem directly from goals and are quantified and expressed for a specific time period.

Figure 2 shows the flow of activities for the program analysis. Based on the objectives, output targets are developed for 3 to 5 alternative levels, depending on the feasible range of options. The multi-level

analysis is at the heart of the entire process. Here resource systems are evaluated in depth and then brought together as shown in tables 1 and 2. These systems were first presented in the "Environmental Program for the Future" (1974). They are now part of the annual budget process.

Specific identification of outputs will be one of the major impacts of the Act. Historically only a few outputs (and resulting benefits) were identified, such as timber sold and animals grazed, but RPA now requires that all investments must be justified and related in some way to current or future beneficial use. It will no longer be enough to request money for range improvement or to stabilize sheet erosion because it is a "good" thing to do. The benefits that result from those investments must also be shown so their relative priority can be examined. My interpretation of what RPA means by "benefits" is some utility to man now or in the future. Utility includes any satisfaction man may derive from the forest, ranging from a hike in the woods to using the timber for constructing a house. Utility also includes wilderness if the majority of the public derives more satisfaction from maintaining a forest in its natural state than harvesting its renewable resources.

Outputs are separated into three major types, defined as follows:

Primary--the main goods, services, or environmental conditions of a resource system--the key indicator used to identify with meeting an objective. An example is the production of animal-unit-months of forage for livestock or board feet of timber harvested.

Induced--the indirect result of system activities. They are generally the primary outputs of another resource system. An example is timber harvesting (primary) that produces improved wildlife habitat (induced).

Intermediate<sup>1/</sup> -- the result of performing a necessary step in attaining primary outputs. Two examples into more direct connection to primary outputs are successful tree planting and range allotments are placed under improved management. Two examples with more indirect connections are forest fire prevention and road construction.

Inputs are separated into overhead, operation and maintenance, and capital investments. Beginning with the 1977 budget proposal, which was prepared this year, a budget was initiated on each National Forest for six different expenditure levels. The base is about 85% of the previous year's appropriations and the five more levels are prepared at 10% increasing increments. Other inputs into the multi-level analysis (figure 2) include public involvement, additional policy input, and examining the effect of the alternative programs on the four multi-objectives. These inputs provide additional demand information for use by the administration, Congress, and the general public for making decisions.

Tables 1 and 2 show some of the detail of the by-system analysis, without showing actual quantities and dollar amounts. No effort is made to be complete; only the major output and input items are listed. Many of the outputs (table 1) are difficult to measure (partially explaining why they were not previously identified in Forest Service planning); for example, determining effects of forest management on wildlife populations. The manager needs to know the critical habitat requirements affecting a particular species before a quantified effect can be specified. The Research branch of the Forest Service is beginning to provide this information, but it is a complicated task.

For some other outputs the effects can be measured, but little effort has been made to collect data that relate to how people are affected.

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<sup>1/</sup> It is important to realize that intermediate outputs should only be justified in terms of their contribution to primary outputs.

Two examples are effects of forest management on water quality and soil loss. At the present time, water in lakes and streams is rated as low, moderate, or high in terms of water quality. However, all major streams should have water quality standards based on the uses made of the water. With this information, priorities can be stated where investments would attain the greatest benefit.

Soil loss has traditionally been measured in tons per acre. This measurement approach says nothing about effects on people's use of these resources now or in the future. Effects should be measured in terms of loss of site productivity for type of vegetation and expected damage, enroute or down stream. For example, rehabilitation is far more critical in a watershed above a city than it is in sparsely populated areas, and maintaining site productivity on a high-value timber site should be of more immediate concern than it is in brush country that yields few useful products.

After the multi-level analysis is complete, proposed alternative programs are presented to higher levels in the administration for review and approval. Finally the alternative programs are submitted to Congress (figure 2). At this stage only the National program would be outlined, but it should fully represent Forest and Regional concerns.

### Conclusions

By requiring the Forest Service to justify their investments, the 1974 Resource Planning Act is more fully realizing the goals of the founder of the Forest Service--Gifford Pinchot. As he suggested, we

should wisely use our forest resources, we should be efficient in the use of the taxpayers' dollars, and we should be concerned about who receives the benefits. The suggested framework for implementing RPA accomplishes these goals. The approach emphasizes two elements of analysis that have not received much attention in the past. These are (1) more dependence on demand analysis for setting priorities of programs, and (2) identifying outputs for all investments that will relate to the public's use of or concern for its forest resources. The need for more complete analysis and evaluation was emphasized by the Senate Committee on Agriculture and Forestry, which was responsible for bringing the RPA bill to the floor of the Senate. They state in their Committee report (No. 93-386, p. 15):

In other words, the legislation provides for an Assessment of the situation and needs, followed by goal-setting, through the Program, which is then all tied together by detailed evaluation of how the Program is being carried out.

The evaluation principle is essential. Currently the Annual Report of the Forest Service reveals very little on performance (however, this is often true of similar reports from other agencies). Also the reports are not analytical and do not indicate program effectiveness except in general terms.

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TABLE 1. MULTI-LEVEL ANALYSIS BY SYSTEMS (OUTPUTS)

OUTPUTS	OUTPUT INDICATOR	RESOURCE SYSTEMS							ALT. TARGETS
		TIMBER	REC. & WILD.	RANGE	WILDL. & FISH HABIT.	LAND, WATER, & AIR	HUMAN & COM. DEV.	ALT. LEVELS	
<b>PRIMARY</b>									
TIMBER SOLD	CU. FT.	XXX	XXX	XXX	XXX	XXX	XXX	Y	ALT. LEVELS
GRAZING	AUM <sup>1</sup>	XXX		XXX	XXX	XXX		Y	"
RECREATION USE	RVD <sup>2</sup>	XXX	XXX	XXX	XXX	XXX		Y	"
WILDLIFE	NO. BY SPECIES	XXX		XXX	XXX	XXX		Y	"
ENDANGERED SPECIES	NO. BY SPECIES	XXX		XXX	XXX			Y	"
WATER QUALITY	STANDARD	XXX	XXX	XXX		XXX		Y	"
ESTHETICS		XXX	XXX	XXX				Y	"
LOCAL EMPLOYMENT	TYPE NUMBER		XXX	XXX	XXX	XXX	XXX	Y	"
LOCAL INCOME	DOLLARS	XXX	XXX	XXX	XXX	XXX	XXX	Y	"
<b>INTERMEDIATE</b>									
FIRE PROTECTION	ACRES	XXX	XXX	XXX	XXX	XXX	XXX	Y	"
SUCCESSFUL TREE PLANTING	ACRES	XXX		XXX		XXX		Y	"
WILDLIFE HABITAT	ACRES BY SPECIES	XXX	XXX		XXX	XXX		Y	"
RANGE UNDER IMPROVED MANAGEMENT	ACRES			XXX	XXX	XXX		Y	"
SEDIMENT LOSS	TONS	XXX	XXX	XXX		XXX		Y	"
CHANGE IN GROWTH									
TIMBER	CU. FT.	XXX		XXX				Y	"
FORAGE	LBS.	XXX		XXX				Y	"
ROAD CONSTRUCTION	MILES <sup>3</sup>	XXX	XXX	XXX	XXX	XXX	XXX	Y	"
RECREATION FACILITIES	PAOT		XXX					Y	"
WILDERNESS	ACRES	XXX	XXX	XXX	XXX	XXX		Y	"
INVENTORIES & SURVEYS	TYPE NUMBER	XXX	XXX	XXX	XXX	XXX		Y	"
LAND USE PLANNING	ACRES								
	TYPE NUMBER	XXX	XXX	XXX	XXX	XXX		Y	"
ENVIRONMENTAL IMPACT STATEMENTS	ACRES								
	TYPE NUMBER	XXX	XXX	XXX	XXX	XXX		Y	"

<sup>1</sup> Animal Unit Month of Grazing

XXX Primary Outputs

<sup>2</sup> Recreation Visitor Day

XXX Induced by Primary Outputs

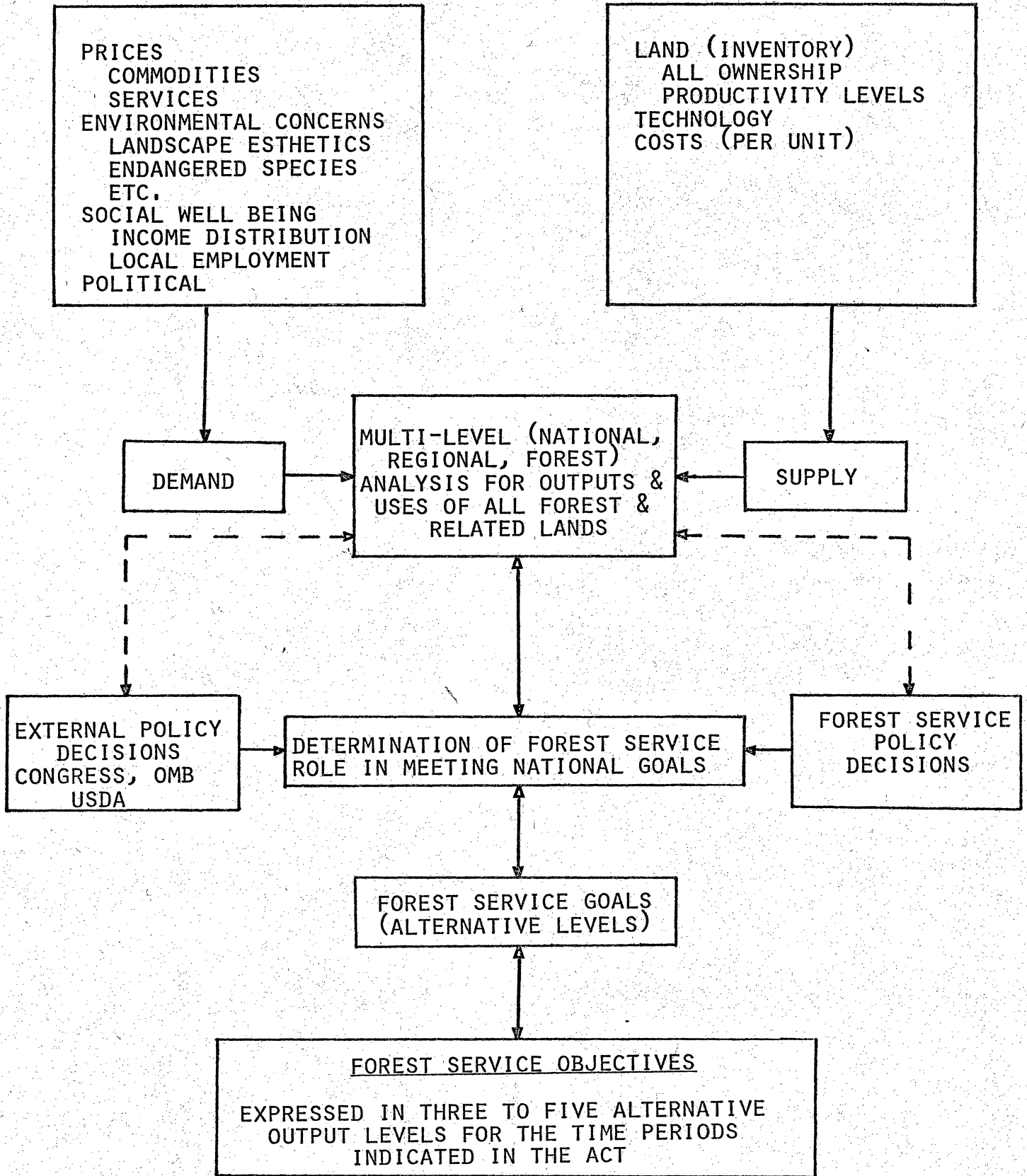
<sup>3</sup> Persons at one time



TABLE 2. MULTI-LEVEL ANALYSIS BY SYSTEMS (INPUTS)

INPUTS	INPUT INDICATOR	RESOURCE SYSTEMS						BUDGET LEVELS
		TIMBER	REC. & WILD.	RANGE	WILDL. & FISH HABIT.	LAND, WATER, & AIR	HUMAN & COM. DEV.	
(APPROPRIATION & CO-OP FUNDS)								
<u>OVERHEAD</u>								
ADMINISTRATIVE FACILITIES	MAN HOURS RENT OR DEPRECIATION	\$	\$	\$	\$	\$	\$	ALT. LEVELS
<u>OPERATIONS</u>								
<u>MANAGEMENT</u>								
SALES PREP.	MAN HOURS	\$						"
TIMBER STAND IMP.	ACRES	\$						"
REFORESTATION (TREES)	ACRES	\$		\$				"
RANGE MANAGEMENT	MAN HOURS			\$				"
REVEGETATION (GRASS)	ACRES			\$				"
WILDLIFE HABITAT RESTORATION & DEVELOP	ACRES				\$			"
REC. & WILDL. MGMT.	MAN HOURS		\$					"
WATERSHED IMPROVEMENT & STABILIZATION	ACRES					\$		"
MINERALS & GEOLOGY MANAGEMENT	MAN HOURS					\$		"
COORDINATION OF SYST.	MAN HOURS	\$	\$	\$	\$	\$	\$	"
INVENTORIES & PLANS	MAN HOURS	\$	\$	\$	\$	\$	\$	"
INVENTORIES & SURVEYS	MAN HOURS	\$	\$	\$	\$	\$	\$	"
LAND USE PLANNING	MAN HOURS	\$	\$	\$	\$	\$	\$	"
ENVIRONMENTAL IMPACT STATEMENT	MAN HOURS	\$	\$	\$	\$	\$	\$	"
RESOURCE PLANNING IN EACH SYSTEM	MAN HOURS	\$	\$	\$	\$	\$	\$	"
SUPPORT ACTIVITIES								
FIRE MANAGEMENT	COST	\$	\$	\$	\$	\$	\$	"
CO-OP LAW ENFORCEMENT	MAN HOURS	\$	\$	\$	\$	\$	\$	"
DISEASE & INSECT CONT.	COST	\$	\$	\$	\$	\$	\$	"
<u>CAPITAL INVESTMENT</u>								
ROADS, TRAILS, BRIDGES	COST	\$	\$	\$	\$	\$	\$	"
RANGE IMPROVEMENT STRUCT.	COST			\$				"
RECREATION FACILITIES	COST		\$					"
WATER DEVELOPMENT	COST					\$		"
POLLUTION ABATEMENT	COST					\$		"
MAINTENANCE	COST	\$	\$	\$	\$	\$	\$	"

FIGURE 1. FLOW OF ACTIVITIES SUGGESTED FOR RESOURCE ASSESSMENT.



————> Denotes primary information flow

====> Denotes feedback

- - - -> Policy decisions should also reflect real world demand and supply conditions.

FIGURE 2. FLOW OF ACTIVITIES SUGGESTED FOR RESOURCE PROGRAM

