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PROCEEDINGS

44th Annual Meeting

WESTERN AGRICULTURAL ECONOMICS ASSOCIATION

Squaw Valley, California  
July 25, 26, 27, 1971

Samuel H. Logan, Editor

PROSPECTS FOR APPLYING THE PROPOSED WATER RESOURCES  
COUNCIL PROCEDURES IN STATE WATER PLANNING\*

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The proposed, and at this writing unapproved, land and water resource planning procedures of the Water Resources Council have been the subject of much discussion over the past year. Following release of the Water Resources Council Special Task Force report on evaluation procedures in June, 1969 [7], a series of tests were carried out on those procedures [8]. After examination of the test results and further review, the Task Force issued a revised and expanded set of reports in July, 1970 [6]. It is these reports which are still under scrutiny.

The Water Resources Council procedures are formally addressed to federal agencies involved in regional or river basin planning and to evaluation of federally sponsored water and related land projects. Therefore, they have thus far been examined in the context of their applicability to federal planning and evaluation. Little attention has been focused directly on the applicability of the new procedures to state-level water resources planning and evaluation. This paper discusses the procedures in this latter context. The proposed Water Resources Council procedures appear to be generally applicable to state-level water planning and evaluation. However, a good many questions of detail warrant examination.

Multiple Objective Planning Procedures

The Water Resources Council Task Force specifies four objectives to be included in frameworks for analyzing federally funded projects. These objectives relate to:

1. National economic development (i.e., economic efficiency from a national standpoint).
2. Regional development.
3. Environmental quality.
4. Social well-being.

The regional development objective is primarily a distributional objective, focusing attention on the interregional distribution of project impacts on income, employment, the environment, social well-being conditions, and other concerns of particular regions.<sup>1/</sup> Some aspects of the social well-being objective are also distributional in nature. The Task Force proposes that a system of "accounts" be used to sort and display project impacts in terms of the four objective categories.

The charge of state water planners is generally to draw up water plans and/or evaluate projects with a view toward enhancing the utilities (however vaguely defined) of their state's own citizens. This holds true whether project expenditures involve state funds or federal funds to be used in the state. Hence, state planners are only incidentally concerned with project impacts -- positive or negative -- on other states and their citizens.<sup>2/</sup> In view of this planning focus, the Water Resources Council objective categories could be placed in a state framework by re-labeling them:

1. State economic development.
2. Environmental quality.
3. Social well-being.
4. Regional distribution.

The first objective in this list corresponds to the federal objective of national economic development, which, in effect, concerns the efficiency analysis; in the state-level context, we are merely carrying out the efficiency analysis from a different perspective. Instead of a regional development objective, I have specified a regional distribution objective. The regional objective seems to be meaningful only as a device to focus on the spatial distribution of efficiency, environmental, and social well-being effects of

projects; within a state, for example, we might examine the distribution of project impacts by river basins or multicounty regions.

The remainder of this paper focuses on some problems and judgments involved in implementing analyses based on three of these objective categories.

### State Economic Development

Several conceptual and measurement problems are associated with the state economic development objective. The root of these problems seems to be a certain confusion concerning "development" and "efficiency" concepts. I would argue, however, that the concepts are not clearly separable, at least in an industrially advanced country such as the United States.

In a recent article [3], Leven uses the terms "developmental" and "nondevelopmental" to distinguish between what he regards to be two basic types of government programs. A "nondevelopmental" activity is defined by Leven as one which "consists simply of the allocation of resources to the provision of a good or service which, for a variety of reasons, is more appropriately provided through other than market channels" [3, p. 723]. "Nondevelopmental" activities involve, for example, the provision of goods that are "public" in nature or that involve large economies of scale in production. A "developmental" activity, on the other hand, is defined by Leven as one which "has as its purpose changing the production possibility surface in the private sector" [3, p. 723].<sup>3/</sup> An example of such an activity might be public provision of a water supply for a growing electrical power industry, where the overall objective is to facilitate growth in the state's population and economic activity. As Jansma [3] points out in his discussion of Leven's article, the dichotomy may, in effect, simply provide a distinction between activities providing consumption goods ("nondevelopmental") and activities providing investment goods ("developmental"). Also, as Leven indicates himself, most or all public sector activities on the expenditure side have both "developmental" and "nondevelopmental" aspects.

Perhaps attempts to distinguish between "developmental" and "nondevelopmental" activities, or between "consumption good" and "investment good" activities, are not particularly fruitful, especially if our concern is primarily with analytical techniques. A possibly more meaningful distinction is one which simply recognizes that some resource projects cause major changes in the economic structure of a state and some do not. In cases of resource projects which leave the overall economic and population structure of a region largely unchanged, e.g., some municipal water supply projects, traditional cost-benefit techniques work reasonably well. Efficiency analyses based upon "willingness to pay" and "opportunity costs" can, in such cases, be carried out without undue ambiguity.

However, both empirical problems and questions of interpretation become considerably more complex when one attempts to analyze -- from the standpoint of a state "efficiency" objective -- projects which have a catalytic effect on the economic and population structure of the state. Because of interstate population mobilities, the rather static concept of demand underlying most cost-benefit analyses starts to lose meaning in such cases. A water resource project may facilitate growth in a particular industry, which, in turn, results in more jobs and an influx of people to the state. This expanded population results in a shift in the demand for municipal water and water for related industries. And so the process continues.

When confronted with projects of this latter type, we generally resort to various types of regional models and measure "efficiency" in terms of changes in total or per capita income (for the state of concern) supposedly resulting from the project. However, these income changes must be carefully interpreted if we are primarily concerned with pre-project residents of the state. Schmid and Ward succinctly describe a major aspect of the problem. They state [4, p. 13]:

A man earning \$10,000 in another region may now move to the region being examined for project analysis and earn \$12,000 there. This will be included in value added [for the region] and is a "gain" for the region of \$12,000, but a net benefit of only \$2,000 for the person. The simple change in location of employed people can raise a given region's income without making any person better off.

Assuming the region Schmid and Ward speak of is a state, should any or all of that \$12,000

be counted as a benefit in terms of the state economic development or efficiency objective? As Schmid and Ward's example implies, even an increased per capita state income does not necessarily mean that incomes of any pre-project residents have risen.

Population growth can be, and often is in sparsely populated rural areas of the West, one of the objectives of state-sponsored resource projects. An influx of laborers and their families to a state such as Wyoming might well result in increased local and state tax revenues in excess of the increased public services paid for out of such revenues. Speaking more generally, there likely are economies of scale in the production of many publicly sponsored goods and services; pre-project residents could benefit thusly from an expanded population. Through the use of tax and expenditure data -- perhaps in the area of education -- one might be able to include some of these gains (or losses) in efficiency analyses. Other effects in this realm will have to be handled in the social well-being account.

In light of the above observations, such questions as the following would seem to warrant examination in state-level efficiency analyses of resource projects:

1. How much of the new income generated in the state by the project being analyzed accrues to people induced to move into the state?
2. What kind of pricing or repayment scheme will be utilized, and how will it bear on the interstate distribution of costs and benefits?
3. How will the existing system of state and local taxes affect the retention (within the state) of project benefits?

#### Social Well-Being and Environmental Quality

One almost unavoidable impression one gets from studying the Task Force reports is that the suggested procedures for including social well-being and environmental quality impacts in project analyses are so broad and so all-inclusive as to be nearly impossible to carry out. This is perhaps an unfair criticism, as the Task Force no doubt does not intend for every item under each of these two accounts to be systematically examined in every project analysis. A selection of the more relevant items from the Task Force's long lists must be made in each project analysis. This is particularly true in state-level water planning, where budgets are likely to continue to be considerably more limiting than they are in federal natural resource agencies.

It appears that there will be considerable emphasis on the incidence of project impacts in the social well-being account, if such an account remains in the Task Force's framework of analysis. Whereas a regional account in either a state or federal framework would incorporate the spatial aspects of this incidence, the social well-being account would focus on various income groups, target populations, etc. Kalter and Stevens outline a method that could be used for handling this aspect of social well-being in a recent article [2].

In addition to distributional or incidence aspects, a major component of social well-being analyses should consist of project effects on population growth (or decline) and structures. I indicated earlier in this paper that population growth and movements have definite implications for any state efficiency analysis, and that some accompanying aspects of population change can possibly be formally incorporated in efficiency analyses. However, many of the implications of population size and distribution are not presently expressible in monetary terms. Hence, the social well-being account seems to be the appropriate place to display specifically population impacts in terms of the bearing these impacts have on stated or implied population objectives of a state. Likewise, changes in the availability of goods and services which are perhaps quantitatively but not monetarily measurable belong in the social well-being account; in this category might belong medical services and urban-oriented recreational and cultural services.

Much, of course, still needs to be done in the development of appropriate indices for environmental quality. In addition, we need to decide whether outdoor recreation features of projects belong in the environmental quality account or in efficiency-type accounts. The Task Force actually has outdoor recreation features in both its national economic development account and its environmental quality account, as well as in its social well-being account. It apparently feels that those features for which we can simulate

"willingness to pay" should be included in the efficiency analysis. However, even though we have been at recreation evaluation for quite some time, much of the methodological application remains of questionable merit. Hence, a good argument can be made for placing almost all outdoor recreation impacts in the environmental quality account. This would not preclude simulating "willingness to pay" where meaningful methodologies appear possible, and comparing estimated dollar benefits with the separable costs of these recreation features.

#### Summary

The procedures proposed by the Water Resources Council Task Force appear to hold a good deal of promise for application in state water planning contexts. However, the procedures are somewhat unwieldy in their present form, and refinement and simplification is needed for them to be readily usable in state-level planning and analysis. Additional work is needed on improving techniques for measuring within-state benefits and costs and relating such to the welfare of pre-project residents. Research needs also to be continued on applying social well-being and environmental quality concepts, and on refining indices used to measure impacts in terms of these objectives.

#### FOOTNOTES

- \* Wyoming Agricultural Experiment Station Journal Article No. 488.
- 1/ Regions (economic accounting areas) are not defined in terms of state boundaries in the Water Resources Council framework.
- 2/ A state must, of course, consider impacts on other states to the extent such impacts relate to compacts, laws, etc. that might serve as constraints.
- 3/ Siebert [5] discusses regional growth in terms of potential output (the supply side) and aggregate demand (the demand side). Leven's "development" activities are essentially governmental activities on the supply side, intended to influence the development process.

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