A framework for assessing irrigation performance

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Abstract. A comprehensive framework for conceptualizing irrigation performance is presented which, by clarifying relationships among the many incommensurate approaches to performance assessments, can provide the basis for more systematic comparative assessments of irrigation. Irrigation systems are carefully defined, and their relationships to broader agricultural and socio-economic systems specified in terms both of goals and of inputs and outputs. Goals are seen as crucial to performance assessments, and the existence of many sometimes conflicting goals requires both specification of whose goals are being considered and clarification as to whether the goals are related to inputs, to outputs or to efficiency. Assessments can be categorized according to their purpose, with significant differences among those that monitor operational performance, those that facilitate interventions to improve performance, and those that promote accountability within an operating agency. Assessments also differ in the types of performance measures used. Three distinct categories of performance measures are identified: process measures, which relate to a system’s internal operations; output measures, which focus on a system’s final output; and impact measures, which pertain to the effects that the system’s outputs induce in its larger environment. Performance measures are distinguished from performance standards which may be established from a variety of sources.

Introduction

Irrigation is of major importance in many countries. It is important in terms of agricultural production and food supply; in terms of the incomes of rural people; in terms of public investment for rural development; and often in terms of recurrent public expenditures for the agricultural sector. Yet dissatisfaction with the performance of irrigation projects in developing countries is wide-
spread. Despite their promise as engines of agricultural growth, irrigation projects, it seems, typically perform far below their potential.

This situation has resulted in a proliferation of interventions directed at improving irrigation performance. It has also led to research efforts designed either to evaluate the effects of such interventions, or to enhance understanding of the determinants of performance so that new approaches to improvement might be developed. Interventions have included managerial changes, physical changes, and combinations of the two. Managerial efforts generally focus on the introduction of a set of “improved” practices in the operation of an individual irrigation scheme. Physical changes include such things as lining of canals, installation of measuring and recording devices, and comprehensive rehabilitation programs.

Evaluation of any innovation designed to improve performance requires an assessment of the actual performance of the irrigation scheme before and after the introduction of the change. Research aimed at developing ways to improve irrigation performance also needs to assess the actual performance of systems being studied and evaluate them against chosen standards. In addition, however, researchers must attempt to identify the factors that explain the observed level of performance. This latter concern, with its more analytical focus, is generally seen by researchers as more challenging and interesting that the “mere” assessment of actual performance. Yet unless performance is assessed satisfactorily, the validity of the entire research effort is subject to question. Furthermore, the ability to use the findings of large numbers of individual research studies to make valid generalizations about the determinants of irrigation performance will be severely limited unless research studies are consistent in their assessment of performance.

The assessment of irrigation performance is thus an important topic for irrigation project managers, for those who allocate public funds for irrigation, and for researchers; but it is a topic that has been seriously neglected. Because of the multiplicity of possible approaches to assessing performance, it is also a difficult topic.

The objective of this paper is to develop a logical and comprehensive conceptual framework for understanding irrigation performance. We have deliberately constructed this framework in very broad terms, so that it can embrace the entire spectrum of concepts of irrigation performance. It should be possible to relate any particular assessment of irrigation performance to this framework, thereby exposing the similarities and differences among different types of assessments. We hope that this framework will help to dispel the pervasive ambiguity that currently clouds and confuses our treatment of performance assessment in irrigation.

It may be helpful to the reader if we explicitly note two things that we do not attempt to do in this paper. First, the conceptual framework is not designed