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INDICATOR SYSTEM, MONITORING WATER USE EFFICIENCY

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Abstract
The articles are presented according to the established directions of assessing the effectiveness of automated control systems.

Keywords: Automated control systems, capital investments, damage minimization, water use, water users, inter-farm irrigation system

Introduction

According to the established directions of assessing the effectiveness of automated control systems, the economic efficiency of using information technology is manifested in three areas [1]:

- in the field of management due to the reduction in information search time, reduction in labor intensity and, as a result, increased productivity of management work;
- in the area of application of decisions obtained by means of an information system due to the improvement of the quality of management decisions and optimization of production decisions, determined by the reduction of the time frame for the implementation of management decisions, savings in labor costs, materials, energy and other resources;
- in the area of operation of facilities managed on the basis of decisions obtained by means of the DSS, by minimizing damages and losses from incorrectly made decisions.

Accordingly, the economic efficiency of the DSS is expressed by a set of technical and economic indicators that allow quantitative characterization of the components of efficiency, namely:

- indicators of economic efficiency of the DSS itself, as one of the types of new technology, include: annual economic efficiency, determined through the difference between the cost of results and expenses and the payback period of total capital investments according to annual economic efficiency;

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- indicators of the impact of the DSS on the activities of a technological organization are determined by the growth of labor productivity and information support for management personnel, an increase in the level of automation, an increase in employment (due to the involvement of personnel in maintaining the DSS), criteria for the effectiveness of the operational level of management of technological processes of water use, for example, the deviation of actual values of water distribution and water supply from planned ones, etc.
- indicators of the impact of the decision support system on the quality of management decisions are the criteria for the effectiveness of the strategic organizational and economic level of water use management (prevented damage from flooding and underflooding, profit, etc.).

Improving the system of indicators and criteria for the efficiency of water use is a permanent task of the strategic level of management in the sphere of melioration. The relevance of this task increases many times over in the context of the changed economic mechanism of the country, the target settings of the melioration sphere as an area of economics and the methodological approaches of management theory to assessing the efficiency of decisions taken [1].

Monitoring and evaluation of operational water use management in an inter-farm irrigation system consists of identifying deviations in the quality of water distribution and water supply management through a systematic comparison of actual indicators with planned values [1].

When assessing the management of operational water use, indicators that differ are compared [1]:

- by time (day, decades) and periods of recording (season, year, long-term average over a number of years);
- water users (farm, district, region);
- implementation levels (actual and planned (normative)).

Operational indicators are analyzed throughout the season, final indicators - after its end.

The indicators and criteria for assessing the management of operational activities of the inter-farm irrigation system operation service have been studied in sufficient detail and are widely presented in the specialized literature [1].

The task of assessing the management of the strategic organizational and economic level is to assess the management of processes that determine the qualitative change in water use and, ultimately, the development and competitiveness of the water management organization [1].

The indicators for assessing the effectiveness of the organizational and economic level of water use management serve as a means of:

-ensuring an assessment of the degree of implementation of decisions taken and the effectiveness of water use management;

-identifying shortcomings in the management and control of water allocation and water supply.

Based on the indicators for assessing the effectiveness of the organizational and economic level of water management, an analysis of emerging trends in the management and administration of a water management organization is carried out and the causes that have determined these trends are identified [1]. There are certain difficulties in developing the composition and structure of these indicators, primarily related to the lack of understanding of the need to

separate effectiveness assessments by management levels.

The main drawback of the system of indicators of the efficiency of management activities used today in the practice of the irrigation systems operation service is the impossibility of assessing with their help a number of important socio-ecological aspects of management that are not measured in monetary terms [1].

The observed excessive orientation of water use efficiency assessments on indicators that characterize, mainly, the deviation of actual results from planned (normative) ones, limits the possibility of comparing efficiency indicators for different systems.

Based on the analysis of the problem of choosing indicators and criteria for the efficiency of water use, a system of indicators of the quality of water use management has been developed as part of the present studies.

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