

AN ENVIRONMENTAL IMPACT ASSESSMENT DECISION ANALYSIS SYSTEM FOR IRRIGATION SYSTEMS

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EXTENDED ABSTRACT

In this paper an Environmental Impact Assessment Multicriteria Decision Analysis System for irrigation projects (EIAMDAS) used as a comprehensive tool that enables comparison between irrigation project alternatives is presented. The comparison is based upon all relevant aspects of the surrounding environment during irrigation systems operation. Inputs to the EIAMDAS include are information of the existing system operation derived from selected answers for a set of multiple choice questions that provide sufficient information to describe the baseline conditions and the general design for several project alternatives. On the other hand, the EIAMDAS outputs, in the form of positive and negative scores, allow the user to evaluate different impacts criteria on neighbouring and project areas. The user is also required to input importance weights to these categories of impacts. The different impacts criteria are categorised as environmental social and economic impacts using compromise programming. A simplified example is used to illustrate EIAMDAS operation. The decision is case dependent, and relies on the compromise between positive and negative impacts associated with an irrigation project, and the relative importance (weights) of the different factors involved.. Conclusively the EIAMDAS is an efficient tool for supporting the decision making process, especially in the trade-off between project alternatives according to anticipated environmental impacts including economic aspects. Although this EIAMDAS was developed for irrigation projects applications, the software was designed in a flexible manner to allow for future adaptation to other applications using the same technique.