MODERN NUMERICAL APPROACH TO ECONOMIC-ENVIRONMENTAL BALANCE FOR INVESTMENT PROJECTS

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Multiple criteria decision analysis for modelling the economic-environmental balance has evolved rapidly from economic theory (simple cost/benefit analysis), towards more complexity, in order to cover the whole extent of the problem. Mathematical modelling provides extensive support to the decision making process, such as the analysis of economy-environment relationship. Multiple criteria decision analysis is successful, but faces one major problem. Modelling works optimally with objective parameters. But human preferences are difficult to measure objectively. Analyzing the offsets occurring in the decision-making process is difficult, especially in the circumstances of uncertainty regarding the environment issues. Additional efforts for achieving a greater objectivity in multiple criteria analysis are required. There is a natural preference for objectivity in this area of research. All the same, when the impact on environment is taken into account, the subjective positions tend more and more to involve into the decision process. Other authors suggest the modelling adjustment to the human decision-making process rather than adjusting human to the modelling process, like in many situations.

Starting from this issue we show how the rational objectivity in multiple criteria analysis may coexist with human subjectivity in the decision making attempt, both when economical and social, technical, environmental and political criteria are taken into account. We present few numerical attempts to modelling the continuum objectivity-subjectivity in ecologic-economic approach of an investment project. They belong to the class of AHP (analytic hierarchy process) and MAHP (multiple attribute hierarchy process) methods, [8]. This research is conducted under the Research Project IDEI 1239 PN II 2007, CNCSIS.

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