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ECONOMIC-MATHEMATICAL MODEL OF OPTIMIZING MINERAL EXTRACTION FROM SPOIL BANK ROCKS

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Research methodology. The results are obtained with the following methods: economic and mathematical modelling – in determining the target functions of revenue optimization that can be obtained when extracting useful components from waste coal; systems approach – in establishing the mechanism of coordination of the state goals and the goals of the investor's project of spoil bank recycling.

Results. The objective function to optimize the extraction volume of mineral impurities from the spoil bank of rocks at a given restriction of investment volume at the stage of making a decision about getting a special license is designed on the basis of the analysis of the directions of using rocks of coal dumps taking into account the chemical composition of the spoil bank rocks of SE «Lvovugol».

It is shown that many scientists were involved in assessing the investment attractiveness of the use of mining waste projects, but maximization of process modelling of the efficient use of consumer values was seen in the works of such scientists as: K. Pugin, S. Popov., V. Kharchenko, I. Stoyanova.

It was found that the compatibility of technologies for the extraction of certain minerals should be considered to optimize the total discounted revenue, obtained by extraction of components from the spoil bank rocks. It is proved that the return on investment (ROI) is reduced in case of increasing investment into the volume of production of these minerals.

Based on the analysis of normative legal documents and modern methods of economic evaluation of man-made deposits, a scheme of agreement of the aims of the state and potential investors is designed; a procedure of the state support of spoil bank utilization projects in case of their low investment attractiveness is offered.

Novelty. It is established that in the process of simulation of mining of spoil bank rocks, only elements that exceed the Clarke number present industrial interest.

Practical value. The built mathematical model and its software implementation can be applied to the economic evaluation of the feasibility of mining any spoil bank. If you change the

technology of extraction of certain impurities, the model allows you to change the source data in case of decrease / increase in the cost and the volume of the initial investment.

Keywords: economic and mathematical model, volume of investment, profit, recycling waste heap, compromise the objectives of state support of investment.

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