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A rule-based approach for preventive identification of potential conflictive criteria in mining operations in Chile

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Abstract

Mining projects, as with many other extractive activities, result in divergent opinions during the planning process which may trigger conflict. Early understanding of stakeholders’ priorities can help with the design of better projects while reducing sources of potential conflict. The objective of this article is to present a rule-based method for decision support to be used in the first stages of the project to identify disagreements in the form of potentially conflictive criteria. The method proposed defines four attributes that should be evaluated for the different relevant criteria subject to potential conflict: the importance of the criterion, the perceived risk, the fairness, and the affected side’s willingness to make dialogue. These attributes are used to construct a rule-based system that can assess the degree of sensibility to conflict for each criterion. The application of this rule-based approach is explained using information from a real past conflict in Chile, where nine criteria were considered, four key decision makers were interviewed and 81 rules were created. The output given by the rule-based system was compared with the conflict degree given by the four decision makers. Results show that in 44.4% of the responses the rank level was the same, in 44% there was a slight subestimation and in 11% an overestimation of the criterion conflictive level. The method proposed incorporates new aspects into the analysis of sources of potential conflict and is simple enough for an anticipatory screening of potential disagreements around the criteria. In addition, this type of precautionary approach in the earlier stages of project appraisal can contribute to a better project design and a constructive industry-community dialogue.

Keywords: socio-environmental conflict, environmental appraisal, rule-based expert systems, stakeholders’ participation, perceptions.
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