

A multiple criteria decision making approach for electricity planning in Spain: economic versus environmental objectives

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Abstract-

Growing social concern about the environmental impact of economic development has drawn attention to the need to integrate environmental criteria into energy decision-making problems. This has made electricity planning issues more complex given the multiplicity of objectives and decision-makers involved in the decision making process. This paper proposes a methodology that combines several multi-criteria methods to address electricity planning problems within a realistic context. The method is applied to an electricity planning exercise in Spain with a horizon time set for the year 2030. The model includes the following objectives: total cost, CO₂, SO₂ and NO_x emissions as well as the amount of radioactive waste produced. An efficient social compromise between these conflicting objectives is obtained.

Index Terms- Multiple criteria decision making; energy; environmental studies; compromise programming

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