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Decision support models in climate policy. (English) Zbl 1431.91275
Eur. J. Oper. Res. 280, No. 1, 1-24 (2020).

Summary: Climate change is considered among the most critical risks that global society faces in this century. So far, climate policy strategies have been evaluated by means of a variety of climate-economy models, or integrated assessment models (IAMs), in the aim of supporting climate-related decision making. However, their inherent complexity, the number and nature of driving assumptions, and usual exclusion of stakeholders from the modelling process raise the issue of the extent to which they can provide fruitful insights for policy makers. Moreover, as with all modelling frameworks, IAMs inevitably fail to incorporate all relevant types of uncertainty and risk when used as stand-alone tools. This exclusion can have a significant impact on the model outcomes, but can be mitigated if experts' knowledge is elicited in a structured manner and effectively taken into account, towards identifying such factors or reducing respective knowledge gaps. At the same time, a growing number of research publications have been suggesting decision support frameworks for assessing specific aspects in climate policy, based on "bottom-up" approaches and participatory processes. The objective of this paper is to provide a critical review of such frameworks – namely portfolio analysis, multiple criteria decision making and fuzzy cognitive maps – in order to explore their strengths and weaknesses in this area, and propose a new integrative approach, appropriately exploiting blends of these frameworks, to productively complement IAMs, towards enhancing climate policy support.

MSC:

- 91B76** Environmental economics (natural resource models, harvesting, pollution, etc.) Cited in 1 Document
- 91B06** Decision theory

Keywords:

decision support; climate policy; fuzzy cognitive maps; multiple criteria decision making; portfolio analysis

Software:

WASP

Full Text: [DOI](#)

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