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A Systematic Analysis of the Characteristics of Energy Models with Regard to their Suitability for Practical Policy Recommendations for Developing Future Strategies to Mitigate Climate Change

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Short version

The results of energy models can have a substantial impact on climate policy debates. The goal of this study is to discuss the theoretical background of the models, to analyse their strengths and weaknesses and to relate the research questions to the models. Here the systemisation approaches will be described and the four most common model type, general equilibrium models, input-output models, optimisation models and simulation models will be introduced and systematically compared. Basis/reference scenarios, no-regret options, technological development, and the level of endogenisation vs. the level of detail, will be used to discuss the critical factors for determining the effects of energy models. The application of energy models and causes for differences in the results are presented for employment effects, combined heat and power (CHP) systems and the transportation sector. Here the structuring approach was developed for formulating research questions concerning issues on climate change and will be exemplary applied to several questions.