Evaluation of climate change impacts on energy demand

Although previous climate change research has documented the effects of linking mitigation and adaptation in the energy sector, there is still a lack of integrated assessment, particularly at national level. This paper may contribute to fill this gap, identifying the interactions between climate change and the energy demand in Macedonia. The analyses are conducted using the MARKAL (MARKet ALlocation)-Macedonia model, with a focus on energy demand in commercial and residential sectors (mainly for heating and cooling). Three different cases are developed: 1) Base Case, which gives the optimal electricity production mix, taking into account country’s development plans (without climate change); 2) Climate Change Damage Case, which introduces the climate changes by adjusting the heating and cooling degree days inputs, consistent with the existing national climate scenarios; and 3) Climate Change Adaptation Case, in which the optimal electricity generation mix is determined by allowing for endogenous capacity adjustments in the model. This modeling exercise will identify the changes in the energy demand and in electricity generation mix in the Adaptation Case, as well as climate change damages and benefits of the adaptation. © 2012 Elsevier Ltd. All rights reserved

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