

PROGRAMME

3rd International PhD-Day of the AAEE Student Chapter

Linz - Eberstalzell

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The aim of the PhD-Day is to give PhD-students the opportunity to present their work in detail including a comprehensive feedback of senior researchers and professors in the field of energy economics. For each paper 40 minutes of discussion are foreseen; approx. the half for the author, 15' for a detailed feedback by two discussants (a junior and a senior researcher) and the rest for general discussion. **The participation and all provisions (coffee break, lunch & dinner) during the PhD-day are free of charge!**

Modelling heating energy demand, related efficiency potential and economic viability of apartment buildings in the Czech Republic

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Abstract

Multi-family buildings in central and eastern European countries (CEE) built between 1950 and 1990 are related to high energy demand for heating and hot water preparation. Lack of basic energy efficiency requirements at that time and typically applied concrete panel construction methods are the main reasons for their high heating energy consumption. The main aim of this work is to model energy demand for space heating in the apartment buildings and to analyse the energy reduction potential and cost-effectiveness of different renovation measures. Data on building stock and economic parameters is collected. The energy saving potential and economic viability is calculated by using a bottom-up approach which is based on a monthly balance approach. To show cost-effectiveness of different renovation options the net present value is calculated. The analysis shows that energy reduction of app. 80% can be achieved by using ambitious renovation measures. However, techno-economical assessment shows that these activities are related to high investment costs and corresponding additional annualised costs. The sensitivity analysis shows that crucial parameters for the costs are energy prices and interest rates.