

Opponent's Report on Dissertation Thesis

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Title of the Thesis:	Three essays in energy and environmental economics
Type of Defense:	DEFENSE
Date of Pre-Defense:	December 5, 2018
Opponent:	Doc. Mgr. PhDr. Silvester van Koten, Ph.D.

Address the following questions in your report, please:

- a) Can you recognize an original contribution of the author?
- b) Is the thesis based on relevant references?
- c) Is the thesis defensible at your home institution or another respected institution where you gave lectures?
- d) Do the results of the thesis allow their publication in a respected economic journal?
- e) Are there any additional major comments on what should be improved?
- f) What is your overall assessment of the thesis? (a) I recommend the thesis for defense without substantial changes, (b) the thesis can be defended after revision indicated in my comments, (c) not-defensible in this form.

(Note: The report should be at least 2 pages long.)

The dissertation consists of three chapters. The first chapter uses sensitivity analysis to address the LMDI decomposition of air pollutants in the Czech Republic between 1990 and 2016. A known method, LMDI decomposition, is applied in a novel way to uncover the drivers of air emission during this period. The work is novel and promising.

The second chapter addresses the impacts of the Czech reclassification of brown coal reserves on its energy system and deep decarbonisation target. The authors develop a new extended Integrated Market Eform System of the Czech Republic (TIMES-CZ) covering the whole energy sector and use it to assess the impacts of all four policy options. They also perform sensitivity analyses. Both the development of the model and the specific policy analysis are useful. The development of the model creates a better representation by using more detailed technology data using plant level data for the heat and power sector. The policy analysis provides new insights that can inform Czech energy policy. In addition, the sensitivity analysis give an indication of the robustness of the results to important factors, such as fuel and EU-ETS allocation prices.

The work is solid and useful and can be – and has been – published in a good international economic/energy journal.

The third chapter, using and extending the fundamental model ELMOD, focuses on the influence of renewable energy sources on transmission networks in Central Europe. The model focuses on the whole region of CE and provides valuable new results, both in the terms of modeling and policy advice. The model is valuable in itself, as it is the first to model the Czech Republic in the same detail as Germany. Moreover, it is able to capture individual components policy choices (such as the influential German Energiewende policy) on the whole area. The results are important and interesting, adressing an important issue that has theoretical as well as acute political implications: the effects of German energiewende policy choices on the transmission networks (including the Czech ones).

The work is solid and useful and can be – and has been – published in a good international economic/energy journal.

The chapters thus contain original contributions of the author. Furthermore, the chapters are based on relevant references. The thesis would also be defendable at my home institution.

My overall assessment of the thesis is that it is a solid work and can be defended. I thus recommend the thesis for defense.

docent Silvester van Koten, PhD