Wegener Center for Climate and Global Change
University of Graz
Brandhofgasse 5, A-8010 Graz

EconClim research group
Announcement master's thesis

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The economic feasibility of regional energy autarky in Austria's climate and energy model regions

at

Wegener Center for Climate and Global Change, University of Graz

Start: July/August 2015

Supervisors: Assoz. Prof. Dr. Birgit Bednar-Friedl, Mag. Thomas Schinko

Austria has an ambitious climate and energy goal: for renewable energy sources (RES) to reach 34% of gross final energy consumption by 2020 and 78% by 2050. Moreover, Austria aims to become energy self-sufficient by 2050, primarily by investing in renewable energy and increasing energy efficiency. Austria is pursuing its climate goal, and concurrently energy security and regional development, by supporting climate and energy model regions, which are committed to becoming independent of fossil fuels by 2050. The designated 83 model regions are for the most part rural and structurally weak. The expectation is that subsidies to deploy RES technologies in the regions will be a driver for socio-economic development by consuming locally generated energy and, in so doing, create jobs and other "multiplier" effects. The regions can also benefit by exporting energy. In other words, investment in renewable energy in structurally poor regions is viewed, correctly or not, as a no-regret strategy for mitigating climate change, at least to the extent that the gains from regional development exceed the additional costs of renewable energy. Experience from the town of Güssing, however, raises concerns about the economic, political and social feasibility of Austria's regional energy autarky approach. While for a long time praised as a success story, recent research has revealed that the Güssing model was in jeopardy when subsidies were withdrawn for the operation of the biomass facility.

The master's thesis should therefore assess, from an economic perspective, the pros and cons (benefits and costs for the region and Austria) of simultaneously pursuing climate mitigation, energy autarky and regional development with renewable energy development in Austria's model regions. In a first step a literature review focusing on empirical economic analyses of RES-based regional energy autarky at the regional and the national level will be conducted. Based on this literature review an initial set of framework conditions, which may eventually determine if regional energy autarky leads to net economic benefits or net economic costs, respectively, will be identified. In a second step, the master's thesis will employ the comprehensive, macro-economically consistent Computable General Equilibrium (CGE) modeling approach to analyze the economic feasibility of a regional RES autarky strategy. Based on an existing CGE model for the Austrian Economy and building upon the Wegener Center's "sub-state"-regional modeling experiences a CGE model for the analysis of a regional energy autarky strategy will be developed and employed. The modeling exercise will result in a better understanding of the conditions necessary for RES in the model regions to constitute a no-regrets strategy for climate change mitigation at the regional and national scales.

The master's thesis will be closely related to the research project LINKS "Linking climate change mitigation, energy security and regional development in climate and energy model regions in Austria" at the Wegener Center and in collaboration with the International Institute for Applied Systems Analysis (IIASA). The envisaged start date for the master's thesis is July/August 2015. Subject to availability, a PC workplace at the Wegener Center will be provided.

Technical qualifications:

- Master student in environmental systems sciences (major in economics or sustainability management), economics, Joint Degree Sustainable Development or other equivalent master's program
- Excellent knowledge of and ideally practical experience with quantitative economic methods (CGE modeling)
- Experience in working with energy and economic data bases (e.g. national accounts, energy statistics) advantageous
- Very good English skills

Personal skills:

- High level of dedication and motivation to work independently in research
- Interest in questions regarding energy autarky, energy model regions and economic modeling
- Ability to work in an interdisciplinary research team
- High degree of self-organization and effective time management
- Excellent manners

Duration: 6 months (with an option to extend)

Payment: 440 EUR/month scholarship (with an option to increase after 6 months)

For questions on content:
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Please send your application (Motivation letter, curriculum vitae and transcript of records) via e-Mail to Sabine Tschürtz, sabine.tschuertz@uni-graz.at.

Application deadline: 15.05.2015

For further information on the Wegener Center and its research go to www.wegcenter.at.