

The goal of the project titled “Financial efficiency of renewable energy investments in Central European Emerging Markets – individual household perspective” is to examine and compare the economic efficiency of different energy supply systems utilizing renewable resources and fill in the gap in the existing literature related to this area. This analysis will be carried out from the individual household perspective (non-commercial final user) located in Central Europe.

Poland is the 2nd after France high-population EU country in which 55.8% of the population live in a detached house or semi-detach house, this reveals the fact of high potential of employing numerous renewable energy technologies. Such specific conditions i.e. relatively large area for installation, allows Polish and Central European investors (prosumers) to consider and compare many possible RE sources to be employed for heat and electricity providing, by an individual households. Current economic decisions and everyday life of an individual household are strongly impacted by regulations related to renewable energy, but also by climate change. Cost of energy production and cost of CO₂ emission rights impacts directly electricity and heating bills, but also via producer cost channel - prices of a broad range of goods purchased by consumers. Low quality of air, which is a common problem for analysed Central European countries, affects individuals but also places stress on the overall health system.

Effects of our project will take form of scientific articles. In the outcomes of the study we will validate the hypothesis that at current level of technical development of renewable resource equipment, its costs and legal framework – it is economically rational to sustain total energy demand from renewable resource in analyzed Central/Eastern European markets, for individual households. We claim that such RE investments in current socio-economic conditions can yield returns that satisfy investors’ expectations. In the results of our research we will provide answers for questions and problems like:

- (1) What are the internal rate of return (IRR) and net present value (NPV) of investments in selected renewable energy supply systems?
- (2) Is it economically rational to invest in sustainable energy heating systems in a microscale vs a non-renewable based source of energy like gas or district heating?
- (3) What renewable energy production technologies are available for typical individual households taking into account technological, physical, economic, and legal limitations?
- (4) Costs and benefits related to investment choice “insulation vs energy production” i.e. is it economically rational to invest more in saving the energy – building insulation or in producing the energy from a renewable resource?