https://doi.org/10.7250/CONECT.2024.023

GEOSPATIAL ANALYSIS OF ENERGY POVERTY AND ACCESSIBILITY TO DISTRICT HEATING SYSTEMS

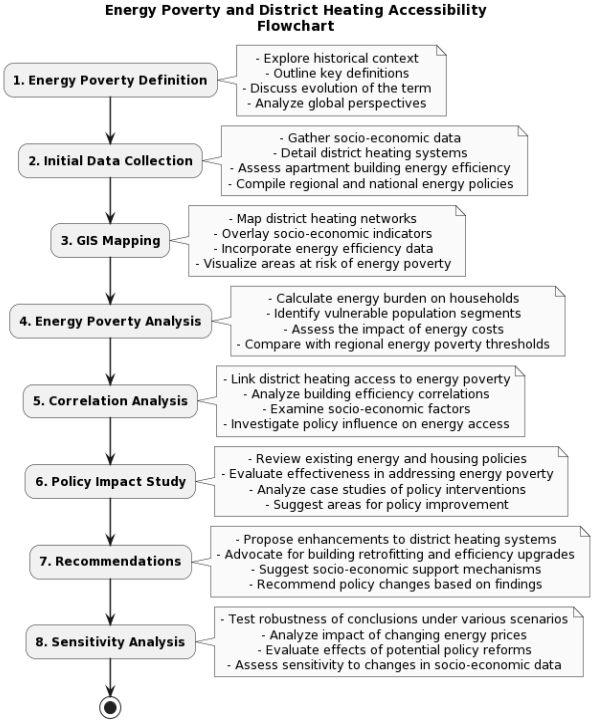
Kristian KIRS[1*], **Anna VOLKOVA**[2]

[1, 2] *Tallinn University of Technology, Ehitajate tee 5, Estonia*

[*] ***Corresponding author.*** *Email address: krkirx@taltech.ee*

Abstract – This research paper undertakes a comprehensive geospatial analysis to investigate the relationship between energy poverty and district heating accessibility in Estonia. Utilizing ArcGIS Pro and statistical software, the study maps district heating systems, evaluates the energy efficiency of apartment buildings, and examines socioeconomic factors influencing energy poverty. By integrating GIS data with socioeconomic and building energy performance indicators, the research identifies areas where district heating is either absent or inefficient and correlates these findings with instances of energy poverty. Preliminary data may indicate a significant correlation between the lack of accessible district heating and increased energy expenses among lower-income households. The study also evaluates the impact of building energy efficiency on heating needs, revealing that older, less efficient buildings contribute disproportionately to energy poverty. Recommendations include policy interventions to expand and optimize district heating networks, alongside building renovation programs to enhance energy efficiency. This research contributes to the broader understanding of sustainable urban heating solutions and their role in mitigating energy poverty.

Keywords – Building renovation; energy policy; Estonia; fuel poverty; Geographical Information System (GIS); socioeconomic impact; sustainable urban development



Methodology description.