4. Conclusion

This study focused on the role of geospatial information on automating the process of estimating heat demand of buildings as well as heat supply. For each building, its geometry, location, material, age and connection to neighbouring buildings are important factors on calculating its heat demand. These parameters are estimated efficiently and automatically in this research using geospatial data and GIS functions through self-developed scripts. For heat supply we have investigated solar air collector as a renewable energy source and tried to estimate its heat production for each building. The above mentioned building-related parameters also influence the yielding energy from a solar air collector. Therefore the resulting energy of solar air collector for each building can also be estimated using geospatial information.

A web application was developed in this study to present the demand and supply results to users. By entering an address of a residential building, the user can visualize the heat demand and supply from solar air collector for the building in each month of the year. This provides an overview on the closeness of demand and supply to householders towards their investment for solar air collector as a renewable energy source.

This research demonstrates the feasibility of using geospatial information and techniques for the automated estimation of heat demand and supply of buildings in a large scale. This helps, among others, urban planners, decision makers, energy sector and citizens on performing different demand/supply analysis on different scales. The developed web application helps distributing the results easily around the world without requiring a special software package.

Further studies can focus on cost estimation and comparison between the costs of the current energy source and the solar air collector for each building. Furthermore, the same research settings can be applied to investigate other renewable energy sources rather than solar air collector.

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