Summary

The work describes the geothermal potential of the Lublin trough. The author, based on the current state of knowledge found in literature, archival data, and existing computer models, analyzes the impact of utilization methods in district heating systems on the exploitable size of geothermal water resources occurring in the Mesozoic and Cenozoic formations.

These resources were estimated for the entire Lublin Basin using computer modeling methods. During the study, the author conducted analyses of possible heat demand profiles and the influence of climate change on the operation of geothermal district heating systems.

Author created models of the Lublin trough, including lithology, thermal properties, and hydraulic permeability. This allowed for the calculation of the expected heating capacities of potential geothermal wells in areas with appropriately thick and productive aquifers.

An analysis of land development enabled the identification of areas with a high heat demand density that justifies the establishment and operation of geothermal district heating networks.

Fragments of aquifer layers were identified where geothermal water can be accessed and energetically utilized. Based on the results of the study, it can be concluded that geothermal waters occur in the Mesozoic formations within the Lublin trough in six depth intervals, primarily in the northern part of the basin.