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# Review of methods for climatic zoning for building energy efficiency programs

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## Abstract

Climatic zoning is an essential element of most building energy efficiency programs, however there is no widely accepted scientific technique for its delineation. This paper reports an investigation on this issue, which comprised the review of climatic zoning methodologies for building energy efficiency programs adopted by 54 countries. The paper identified that the nature and magnitude of climatic variations are not the main elements in the definition of the number of climatic zones in a country. The number of climatic zones seems to be mainly driven by the expected simplicity of the final climatic zoning, respecting in most cases a maximum of 8 zones independent of the country size and climatic variations. A total of 19 different variables, techniques and parameters used in climatic zoning were identified, the most frequent being temperature, degree days, altitude, administrative divisions and relative humidity. However, around 80% of the countries analysed in this study used only up to three variables/techniques/parameters to define their climatic zoning. This simplicity comes at the cost of ignoring several aspects of climate and building energy performance. From the techniques identified in this review, only the combination of building performance simulation and cluster analysis seems to provide robust tools to tackle the complex relations between climate and building energy performance. Combined, these tools may provide the means to explore scenarios and support evidence-based decision making in energy policy. The lack of consensus in several aspects of climate zoning indicates the need for further research in this area.

Keywords: Climatic zoning, building energy efficiency, building climatology.

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