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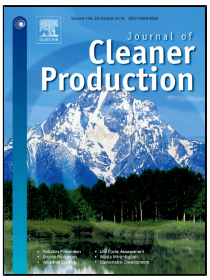

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Regional Suitability of Climate-Responsive Technologies for Buildings Based on Expert Knowledge: A China Study

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Abstract

Global warming and energy shortage have aroused great interests in climate-responsive technologies during recent years. They are required for buildings to positively adjust themselves to local climates in different climate regions. Incorrect selections of these technologies may cause resource waste and low technological efficiency. Therefore, the present study to explore the regional suitability of climate-responsive technologies was conducted with expert knowledge-based investigation in five kinds of climate regions in China, including severe cold region, cold region, hot summer & cold winter region, hot summer & warm winter region and temperate region. 71 climate-responsive technologies were identified for controlling climate physical features (i.e., temperature, humidity, sunlight, and ventilation). Suitability priorities as well as application levels were analyzed with expert knowledge-based rankings, based on which, a database of climate-responsive technologies for buildings in different climate regions was established. The most suitable general technologies in different climate regions were derived regarding temperature, humidity, sunlight, and ventilation. The findings illustrated universality and disparity of technology regional suitability and