

论文

中国与欧美寒冷地带采暖耗能的比较

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摘要:

论文分别采用我国目前采暖标准和欧美国家的较高采暖标准, 对我国严寒和寒冷地区8个城市的采暖耗能及相应的温室气体排放强度与欧美国家同纬度地区进行了对比。结果表明, 中国季风气候的特点使严寒和寒冷地区冬季较世界同纬度地区更为寒冷而漫长, 居民基本的生存采暖耗能需求高于世界同纬度地区。无论采用中国、德国、美国哪一种采暖标准, 中国严寒和寒冷地区采暖强度远高于同纬度的欧美城市, 有的城市要高于同纬度欧美城市1倍以上; 目前中国严寒和寒冷地区的采暖标准属于维持基本生存必需的较低标准, 中国要达到与欧美相同的热舒适水平必然比其他国家增加更多的采暖消耗; 即使像目前这样, 中国采取较低的采暖标准, 而欧美国家采用较舒适的德国或美国标准, 中国8个城市中有5~6个城市的采暖强度仍明显高于同纬度欧美城市。

关键词: 中国 欧美 寒冷地带 采暖强度 采暖持续时间

Comparisons of Energy Consumption between Cold Regions in China and the Europe and America

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Abstract:

Three heating criterions coming from China, Germany and the United States of America are used to calculate and compare the energy consumption for heating in winter between eight typical cities in severe cold and cold regions of China and the cities which locate at the same latitude respectively in the Europe and America. Conclusions are drawn as following. Firstly, energy consumption for heating in the eight cities in China is higher than the oversea cities when they adopt the same heating criterion, because the winter in the severe cold and cold regions of China is colder and longer than the other regions locating at the same latitude in the Europe and America due to the monsoon climate. Secondly, much more energy consumption is needed for heating in China from the current basic survival standard to the thermal comfort standards in the developed countries at the same latitude in the Europe and America. Thirdly, even if the lower heating criterion is adopted by China and the higher heating criterion of Germany or the USA are adopted by the oversea cities, five or six cities' heating intensities, that is, heating energy requirements and greenhouse gas emission intensities in China, are obviously higher than that in the western cities.

Keywords: China the Europe and America cold region heating intensity heating days

收稿日期 2010-07-01 修回日期 2011-02-01 网络版发布日期

DOI:

基金项目:

中国气象局气象关键技术集成与应用面上项目(CMAGJ2011M18); 科技部支撑项目(2007BAC03A11)。

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参考文献:

- [1] 王伟光, 郑国光. 应对气候变化报告(2009): 通向哥本哈根[M]. 北京: 社会科学文献出版社, 2009: 1-37.
- [2] 王文军, 潘家华. 浅议中国在后京都时代的气候政策走向[J]. 中国社会科学院研究生院学报, 2010(2): 21-26.
- [3] 潘家华. 满足基本需求的碳预算及其国际公平与可持续含义[J]. 世界经济与政治, 2008(1): 35-42, 5.
- [4] 国务院发展研究中

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