



“Gheorghe Asachi” Technical University of Iasi, Romania



---

## ESTIMATION OF CARBON DIOXIDE EMISSIONS AND SPATIAL VARIATION FROM TOURISM ACCOMMODATION IN CHINA

Zi Tang<sup>1,2</sup>, Jie Shang<sup>3,4\*</sup>, Changbo Shi<sup>2</sup>

<sup>1</sup>School of Environment, Beijing Normal University, 19 Xijiekouwai Street, Beijing, 100875, China

<sup>2</sup>School of Tourism and Cuisine, Harbin University of Commerce, 138 Tongda Street, Harbin, 150076, China

<sup>3</sup>School of Economy and Management, Northeast Forestry University, 26 Hexing Road, Harbin, 150040, China

<sup>4</sup>College of Economics, Heilongjiang University of Science and Technology, 2468 Puyuan Road, Harbin, 150022, China

---

### Abstract

Accommodation profoundly affects energy use and carbon dioxide emissions in the tourism sector. This paper focuses on star-rated hotels in China, and applies a bottom-up approach to estimate the amount of carbon dioxide emissions from tourism accommodation in 1998–2009. The results show that carbon dioxide emission of star-rated hotels increased from 4.37 million ton in 1998 to 16.82 million ton in 2009 (an increase of 3.84 times). Although the amount of carbon emissions is increasing, the rate of change shows a decrease in the trend. The three-star hotels were the largest carbon dioxide discharger, followed by two-star hotels. In spatial variation, carbon dioxide emissions from tourism accommodation in coastal areas are generally greater than those in inland areas, and they are generally greater in southeastern part than in northwestern part. In 2009, the highest carbon dioxide emissions occur in the central part of eastern coastal China.

The result of research in this study has great significance to further calculation carbon dioxide emission of hotel industry.

*Key words:* carbon dioxide emissions, spatial variation, star-rated hotels, tourism accommodation

*Received:* August, 2012; *Revised final:* July, 2013; *Accepted:* August, 2013

---

\* Author to whom all correspondence should be addressed: E-mail: [tz09@163.com](mailto:tz09@163.com); Phone: +86-451-84839474