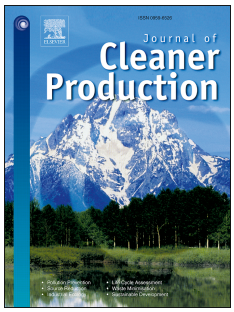
Accepted Manuscript



Impact of efficiency, investment, and competition on low carbon manufacturing

Xu Chen, Zheng Luo, Xiaojun Wang

PII: S0959-6526(16)32159-X

DOI: 10.1016/j.jclepro.2016.12.095

Reference: JCLP 8670

To appear in: *Journal of Cleaner Production*

Received Date: 20 July 2016

Revised Date: 12 December 2016

Accepted Date: 19 December 2016

Please cite this article as: Chen X, Luo Z, Wang X, Impact of efficiency, investment, and competition on low carbon manufacturing, *Journal of Cleaner Production* (2017), doi: 10.1016/j.jclepro.2016.12.095.

Impact of efficiency, investment, and competition on low carbon manufacturing

Xu Chen[1*], Zheng Luo[1], Xiaojun Wang[2]

1. *School of Management and Economics, University of Electronic Science and Technology of China, Chengdu, 611731, P. R. China.*
2. *Department of Management, University of Bristol, Bristol, BS8 1TZ, UK*

Abstract: Low carbon economy has become a top agenda for many countries following the agreement in the Paris meeting on climate change. In this article, we take price and emission sensitive demand into account and incorporate competition between the two rival manufacturers in the demand function. This research takes more proactive actions incorporating carbon emissions in the strategic and operational decisions, which complements the existing literature on low carbon manufacturing, in which the carbon emissions attribute is often used as a constraint, or only the single manufacturer's demand is considered. Based on game theory, the pricing and carbon emissions reduction decisions are investigated. Our study contributes to the existing literature on low carbon manufacturing by specifically examining the impact of production efficiency, carbon emissions reduction efficiency, and market power structure on achieving low carbon manufacturing. Through the systematic analysis of optimal pricing and green technology investment decisions to improve the economic and environmental performance under different market power structures, our findings provide valuable managerial implications, which will help many manufacturing firms to make important strategic and operational decisions regarding low carbon manufacturing.

Keywords: Low carbon manufacturing; green technology investment; power structure; price competition; emission competition.

* Corresponding author (Xu Chen): E-mail: xchenxchen@263.net; Tel: +86 28 83206622