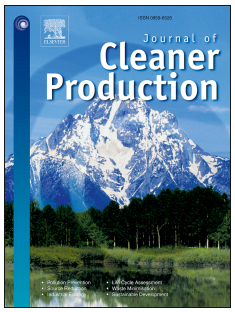
# Accepted Manuscript




Does grid-connected clean power promote regional energy efficiency? An empirical analysis based on the upgrading grid infrastructure across China

Yongpei Wang, Weilong Yan, Shangwen Zhuang, Jun Li

PII: S0959-6526(18)30777-7

DOI: 10.1016/j.jclepro.2018.03.116

Reference: JCLP 12374

To appear in: *Journal of Cleaner Production*

Received Date: 22 November 2017

Revised Date: 8 February 2018

Accepted Date: 11 March 2018

Please cite this article as: Wang Y, Yan W, Zhuang S, Li J, Does grid-connected clean power promote regional energy efficiency? An empirical analysis based on the upgrading grid infrastructure across China, *Journal of Cleaner Production* (2018), doi: 10.1016/j.jclepro.2018.03.116.

# Does Grid-Connected Clean Power Promote Regional Energy Efficiency? An Empirical Analysis Based on the Upgrading Grid Infrastructure across China

Yongpei Wang[a,*] , Weilong Yan[a], Shangwen Zhuang[a], Jun Li[b]

a School of Government Audit, Nanjing Audit University, 211815 Nanjing, China
b State grid energy research institute, 102209 Beijing, China

**Abstract** On the basis of the fact that China is setting up world's largest electricity network with the extra high voltage (EHV) and ultra high voltage (UHV) as their backbones, creating the foundation for large-scale accession of clean power which may deeply affect regional energy efficiency across the country, this paper attempts to empirically study the joint effects of clean power accessing to power grids on regional total-factor energy efficiency. To complete this job, we first measured the total-factor energy efficiencies of 29 provinces in China over the period 1991-2013, based on one of the data envelopment analysis methods, then, the static panel model considering panel fixed effect with instrument variable (FE-IV), dynamic panel model of system generalized method of moments (SYS-GMM) and panel smooth transition regression (PSTR) were employed, respectively, to investigate separate and joint effect of clean power and its grid-connection with EHV and UHV electricity network. The results show that the joint effect of clean power accessing to EHV and UHV power grid is either not significant or even negative although clean power itself separately promote regional energy efficiency. Thus, while the investment in grid infrastructure continues

* Corresponding author
E-mail addresses:wang_yongpei@139.com(Y.P.,Wang)