

Awareness and acceptability of Chinese companies on market-based instruments for energy saving: A survey analysis by sectors



Xianbing Liu ^{a,*}, Can Wang ^{b,*}, Weishi Zhang ^b, Sunhee Suk ^a, Kinichi Sudo ^a

^a Kansai Research Centre, Institute for Global Environmental Strategies (IGES), Japan

^b School of Environment, Tsinghua University, China

ARTICLE INFO

Article history:

Received 2 August 2012

Revised 28 November 2012

Accepted 28 November 2012

Available online 5 January 2013

Keywords:

Market-based instruments

Awareness

Acceptability

Company

China

ABSTRACT

This paper measures the company's awareness and acceptability of market-based instruments (MBIs) for energy saving, and identifies their relationships with pre-classified determinants. The data were collected from 170 respondents mainly from iron & steel, cement and chemical sectors in China. The surveyed companies indicate moderate awareness but good acceptability of MBIs in overall. In contrast to the regulative policies, MBIs and voluntary approaches are more appreciated by the samples. There exist significant and positive relationships between a company's size and its awareness and acceptability of MBIs. This analysis suggests that a company's policy acceptability would be largely determined by the company's perceived policy influences on its comparative competition. The companies would make internal efforts to offset energy cost increases due to the possible introduction of economic pressure policies while being reluctant to simply transfer the policy burden to their clients. Empirical evidences on the conditions for the success of MBIs from this study are meaningful for supporting the future progress of industrial energy saving policies in China.

© 2012 International Energy Initiative. Published by Elsevier Inc. All rights reserved.

Introduction

Environmental economists favor market-based instruments (MBIs) for the internalization of environmental externalities considering their inherent advantages in cost efficiency (Requate, 2005). The economic literature has generated a consensus suggesting that MBIs are optimal in achieving a specific environmental goal (Jaffe et al., 2002). However, the governments determine the use of policies by a wider set of criteria in reality, including efficiency, effectiveness, political acceptability and administration simplicity. This may explain the preference of governments towards regulative policies so far (Rivers and Jaccard, 2006). As the typical MBIs for alleviating the global warming, carbon taxes and greenhouse gas emission trading scheme (GHG ETS) discourage the use of fossil fuels and thus mitigate energy-related CO₂ emissions. In spite of some debates, carbon taxes practiced in several European countries have shown broad and positive effects in reducing CO₂ emissions while yielding very slightly negative impacts on the economic growth (Andersen and Ekins, 2009). The recent and famous EU-ETS is expected to enable the member countries to realize their Kyoto obligations effectively (Sovacool and Brown, 2009). Nevertheless, the adoption of MBIs for improving energy efficiency and mitigating CO₂ emissions has been much slower in Northeast Asia including China (Liu et al., 2011). The discussions of carbon tax policy have been emerging among the experts at

related ministries of China (e.g., Wang et al., 2009). However, the proposed tax rates are very conservative and the policy efficacy would be marginal (Su et al., 2009). To gradually establish an integrative domestic carbon market has been mentioned in the country's 12th Five-Year Plan for National Economic and Social Development (2011–2015), which was endorsed in March, 2011. In October of 2011, National Development and Reform Commission (NDRC) launched the pilots of carbon emission trading in five metropolitans (Beijing, Tianjin, Shanghai, Chongqing and Shenzhen) and two provinces (Guangdong and Hubei) (NDRC, 2011). But there is still no specific decision on how to set the emission caps and no clear timetable for the formal introduction of the domestic GHG ETS. On the other hand, large potentials remain for Chinese manufacturing industries to improve their energy efficiencies due to the irrational structure and the obvious technology gaps (Cai et al., 2008). China needs to learn to gradually make use of MBIs for enhancing its industrial energy saving efficiently.

It appears that companies that are relatively electricity intensive in production respond stronger to the changes in electricity price (Bjørner et al., 2001). However, the studies that solely originated from economic reasoning may not be able to provide credible evidences for supporting the practical policy process. For instance, Henriksson and Söderholm (2009) confirmed that electricity tax could function better in energy-intensive companies while an energy management system would be more effective in companies with low energy intensities due to their lack of prior experience of energy efficiency measures. Krarup and Ramesohl (2002) examined agreement schemes for industrial energy efficiency in five European countries and confirmed that voluntary agreements can play a useful role if integrated into a climate policy mix.

* Corresponding authors at: Kansai Research Centre, Institute for Global Environmental Strategies (IGES), Hitomirai East Building 5F, 1-5-2, Wakinohama Kaigan Dori, Chuo-ku, Hyogo, 651-0073, Japan. Tel.: +81 78 262 6634; fax: +81 78 262 6635.

E-mail addresses: liu@iges.or.jp (X. Liu), canwang@tsinghua.edu.cn (C. Wang).

Practically, the company's awareness and acceptability of a policy would largely determine the actual success of the policy. Therefore, the policy analysis at a company level is meaningful and necessary (Dieperink et al., 2004). Some previous studies have analyzed the effectiveness of MBIs in affecting the company's efforts in energy saving in developed economies (e.g., Blok, 1993; De Groot et al., 2001; Klok et al., 2006), whereas research identifying the success conditions of industrial energy efficiency policies is still very limited, especially for the practice of MBIs in developing countries. Aiming to close the existing research gap, this paper measures the awareness and acceptability of Chinese companies on MBIs related to industrial energy saving. Three sectors, iron & steel, cement and chemical industries, were targeted due to their high energy intensities and great importance in realizing the country's overall target of energy efficiency. Three topics are discussed in this paper: a) Company's awareness and acceptability levels of the pre-listed MBIs for energy saving; b) The relationships between a company's policy awareness, acceptability and the classified determinants; and, c) Company's behavioral changes of energy management in response to the MBIs.

The remainder of this paper is structured as follows. **Development of analytical framework** section develops the analytical framework and identifies the determinants of a company's policy awareness and acceptability. **Background of the three target sectors** section outlines the background of the three target sectors. **Methodologies** section explains the methodologies. **Results and discussions** section discusses the statistics of company's policy awareness and acceptability, and the econometric analysis results. Lastly, **Conclusions** section concludes the survey analysis and proposes topics for future studies.

Development of analytical framework

Development of analytical framework of this study

The analytical framework of this empirical study is developed as in Fig. 1.

Institutional theory elucidates the overall context for discussing a company's environmental behaviors (Liu et al., 2010). Following the institutional perspective, our model admits the importance of external pressures for driving a company to identify its energy management problems and correspondingly to search for energy efficiency related policies and technologies as a kind of strategic information. A company's policy awareness depends on to what extent the policy-related information has been collected and comprehended by the company. It is rational to infer that a company's acceptability to a policy would be determined by the company's evaluation of the policy's impacts to its comparative competitiveness, either actually experienced or perceived. The external pressures may determine a company's policy acceptability by influencing its forecast of the policy impacts. Although better awareness of a specific policy would be useful for a company to more exactly evaluate the policy impacts, it shall

be kept in mind that higher policy awareness does not necessarily lead to higher policy acceptability.

In the general social-political realm, governmental regulations and expectations from special groups, such as industrial associations, are viewed as essential external pressures for enhancing a company's environmental behaviors (Liu et al., 2010). However, the existing governmental requirements of industrial energy efficiency still do not regulate small and medium-sized enterprises (SMEs), which share a large portion of the samples in this survey. The industrial associations are weak in current China. Their functions in assisting the companies in energy saving practices are very limited in overall (Liu et al., 2012). This is why we excluded the coercive and normative pressures from the analytical frame of this study. Meanwhile, some truth has been revealed that market competition works as an incentive for the companies to obtain strategic information (De Groot et al., 2001). More complex experience of international diversification on the environment was confirmed to positively influence a company's proactive environmental strategy (Aguilera-Caracuel et al., 2012). One of our previous surveys in China confirmed the usefulness of business competitors and energy price pressure for encouraging the company's energy saving practices, including the collection of information on energy saving policies and technologies (Liu et al., 2012). Three factors, competition pressure, international orientation and energy price pressure, are therefore classified as external pressures in this frame.

Besides the external pressures, a company's organizational capabilities are required for appropriately reacting to environmental policies (Christensen and Rosenbloom, 1995). Small companies are usually in a disadvantage position to obtain strategic information (Gruber and Brand, 1991). Smaller and financially constrained companies are more susceptible to economic incentives than their larger or financially less constrained counterparts (Skuras et al., 2006). The industrial energy saving policies in China focus on the large energy-consuming companies so far and these companies have longer experiences with energy efficiency programs (Price et al., 2008). Henriksson and Söderholm (2009) found that if a voluntary agreement and a tax on energy are there, the companies with high energy cost shares tend to opt for the former. This implies that the energy-intensive sectors are more sensitive to carbon pricing instruments. It is why carbon tax policy proposal always recommends certain relief measures for these sectors (Liu et al., 2011). In addition, the companies with higher energy saving potentials could more flexibly deal with the climate related costs by self reduction efforts. Aiming to identify the difference in policy awareness and acceptability due to the company's characteristics, organizational size, sector belongings, ownership, learning capacity and energy saving potential are added as controls in this model.

Industrial energy saving policies included in this survey

The descriptions and abbreviations of policies in this survey are listed in Table 1.

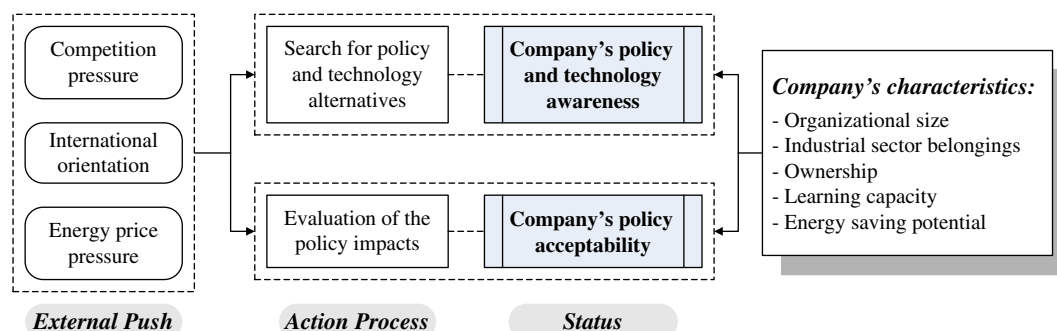


Fig. 1. Analytical framework of this study.

Download English Version:

<https://daneshyari.com/en/article/1046983>

Download Persian Version:

<https://daneshyari.com/article/1046983>

[Daneshyari.com](https://daneshyari.com)