



ELSEVIER

Energy Economics 23 (2001) 717–740

---

---

Energy  
Economics

---

---

www.elsevier.com/locate/eneco

# Energy saving by firms: decision-making, barriers and policies

Henri L.F. de Groot\*, Erik T. Verhoef, Peter Nijkamp

*Department of Spatial Economics and Tinbergen Institute, Vrije Universiteit, De Boelelaan 1105,  
1081 HV Amsterdam, The Netherlands*

---

## Abstract

Promoting investments in energy-saving technologies is an important means for achieving environmental goals. Empirical evidence on success conditions of associated policies, however, is scarce. Based on a survey among Dutch firms, this paper sets out to identify the factors that determine the investment behaviour of firms, their attitude towards various types of energy policy, and their responsiveness to changes in environmental policy in the Netherlands. On the basis of discrete choice models, this paper aims to investigate empirically, whether (and how) these strategic features vary over firm characteristics and over sectors. © 2001 Elsevier Science B.V. All rights reserved.

*JEL classifications:* D20; Q40; Q48

*Keywords:* Energy saving; Investment behaviour; Environmental policy

---

## 1. Introduction

Environmental quality and resource management has become a prominent challenge in a modern economy. The complexity involved has prompted a series of diverse policy initiatives, ranging from market oriented instruments (like taxes, subsidies and tradable permits) to command and control measures (ranging from voluntary agreements to standards). The pros and cons of such policies have been extensively mapped out in the literature (see Tietenberg et al., 1999, for a general overview). In practice, many policy initiatives are hindered by much uncertainty

---

\* Corresponding author. Tel.: +31-20-444-6168; fax: +31-20-444-6004.

*E-mail address:* hgroot@econ.vu.nl (H.L.F. de Groot).

(see, for example, Roberts and Spence, 1976, and Adar and Griffin, 1976), so that a clear choice for price-based instruments — as opposed to quantity-based instruments — is difficult to make. Consequently, we have seen a formidable variation — over time and among countries — in the application of policy instruments and measures. This also holds for a country with a traditionally strict environmental policy, The Netherlands.

Although with varying degrees of priority, environmental problems have always been high on the Dutch policy agenda. In recent years, Dutch environmental policy has been relatively successful, at least in the reduction of emissions of some pollutants. Despite a strong economic growth performance, many emissions of pollutants have been reduced. This improvement is to a large extent the result of a more intensive use of environmentally-friendly technologies, the adoption of which was stimulated by the imposition of clear policy objectives, task requirements, and voluntary agreements. Despite these improvements, several serious problems still remain. The most pressing problems in the Dutch situation are associated with climate change, noise, and eutrofication. Additional policies will be required to reach the targets that have been set in the so-called *NMP4* (the most recent Dutch national environmental plan).

In this plan, the Dutch government opts for more intensive use of voluntary agreements, but also for using and exploiting market-based incentive mechanisms. The general goal is to better reflect environmental decay in prices so as to encourage behavioural changes. Fiscal measures should result in product prices that more properly mirror the (marginal) social costs associated with the use of energy. These additional measures should result in adjustments in producers' and consumers' behaviour, product and process innovations, and a lower use of scarce environmental resources. In order to assess and judge the desirability, the effectiveness and the acceptability of such proposed policy changes, it is of critical importance to obtain clear empirical insights into the way investment decisions in general, and energy use in particular, are being made within firms, how these decisions can be influenced by governance strategies, how firms are likely to respond to various possible policies, and how they judge the feasibility and acceptability of these measures. Against this background, the present paper will address the potentials and impediments of energy-saving strategies among firms by a series of empirical results originating from the analysis of a survey among Dutch firms, dedicated to success conditions for energy savings.

Detailed systematic empirical studies at a sector or firm level are rather scarce in the Netherlands. Some years ago, Velthuisen (1993) and Gillissen et al. (1995) performed a questionnaire among firms, in which they also focused on energy use and related investments. Our research broadens their scope in that we do not only focus on investment behaviour, but also on the stated response to and attitudes towards a set of specified policy instruments. Our new data set allows in addition for a more detailed analysis of the role of various types of uncertainty in investment decisions which, according to investment theories as developed by, for example, Dixit and Pindyck (1994), may be a major explanatory factor for seemingly irrationally high revealed internal discount rates in investment evaluation

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات