



Analysis

Conscientious vs. ambivalent consumers: Do concerns about energy availability and climate change influence consumer behaviour? ☆

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ABSTRACT

Energy availability and climate change are interrelated concerns with economic components. They need to be addressed by policy makers and they require changes in energy consumption. This study examines whether concerns about energy availability and climate change influence consumer behaviour, policy perceptions, and beliefs about future energy consumption. This question is investigated by analysing data from the Eurobarometer 75.4, a comprehensive survey of citizens from all countries of the European Union that was conducted in June 2011 ($n=26,840$). The regression results show that people concerned about climate change were significantly more likely to take action to mitigate climate change, and to be more favourably disposed towards energy policies and future changes in energy consumption, than people who were not concerned about climate change. On the other hand, people who were concerned about energy availability undertook fewer actions and neither supported energy policies nor believed in future changes in energy consumption. This surprising finding raises questions regarding the adequate communication of energy availability and policies to the public in the European Union.

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1. Introduction

The last five years have been turbulent for energy and climate policy, with three major challenges individually and in combination raising questions about the sustainability of current development paths, consumer behaviours and policy decisions. One challenge was that record high oil prices in 2008 and ongoing price volatility reinforced speculations about 'Peak Oil' and the future availability of conventional liquid fuels (Alekklett et al., 2010). A second challenge, the problem of climate change, was highlighted by the Fourth Assessment Report by the Intergovernmental Panel on Climate Change (IPCC, 2007), in combination with limited progress on international agreements to combat climate change. A third challenge, the Global Financial Crisis, which is widely considered to be the worst financial crisis since the Great Depression in the 1930s, sparked discussions about the future of capitalism, and the role of states in controlling markets (Shahrokhi, 2011).

These three global challenges are not unrelated and recent years have seen increasing interest in the relationships between energy availability and climate change (Bang, 2010; Friedrichs, 2011;

Leggett and Ball, 2012). Under some circumstances, policies to address either energy issues or climate change will have a detrimental effect on the other problem, but there are clear synergies that make it possible to manage both risks simultaneously (Turton and Barreto, 2006). In fact, the potentially more immediate and politically salient risk of high oil prices and dependence on imported fuel (Bang, 2010), may lend additional urgency to the widely acknowledged need to reduce greenhouse gas emissions to avoid 'dangerous climate change'. Importantly, environmental and economic issues are highly interdependent (Tienhaara, 2010; Venkatachalam, 2007), with energy and climate change posing serious risks to the global economy. The Stern Report (Stern, 2006) stressed that a failure to combat climate change will result in significantly higher economic costs compared with proactive mitigation costs. A number of other approaches are being developed to study the economic implications of a 'supply-constrained' scenario for oil as an input factor (Kerschner and Hubacek, 2009). The compounding risks of climate change and oil depletion are also believed to seriously threaten global trade, with supply chains predicted to become shorter, and production and consumption patterns predicted to become more localised (Curtis, 2009).

Importantly, constraints on energy availability, climate change, and the economic situation are all human-made problems, and their mitigation will therefore necessitate changes to current behaviours, policies and institutional arrangements. Consumers (especially in Western democracies) play a key role in this situation. The term 'citizen-consumers' (Clarke et al., 2007) has been coined in this context as it depicts the dual role of people in exercising both political and market

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power, and also explains an increasing interest in people's attitudes and in their willingness to engage in pro-environmental behaviour (Barr et al., 2011).

The purpose of this research is to investigate the extent to which concerns about energy availability and climate change influence consumers to opt for energy efficient alternatives. People who are concerned about the global economic situation were analysed as a control group, as some measures could have been adopted for economic reasons. Thus, this paper advances the following main research question: Do concerns about energy availability and climate change influence consumer behaviour, policy perceptions, and beliefs about future energy consumption? This research contributes to knowledge in ecological economics by shedding more light on the complex interactions between human, economic and environmental systems and decision-making processes that explicitly assume bounded rationality (Venkatachalam, 2007) in a society characterised by high levels of household consumption (Tukker et al., 2010), free riding, and "pseudo-satisfaction" (Jackson, 2002, p. 296). The inclusion of energy policy questions in this research and the focus on policy recommendations in the conclusion support the notion of ecological economics as a policy-driven science (Shi, 2004).

2. Public Perceptions of Energy and Climate Change

2.1. Energy and Climate Change

Both energy availability and climate change are likely to have a fundamental impact on sustainable economic development for the future. However, while they are both escalating and global problems, they have been approached very differently by scientists and in the public arena (Friedrichs, 2011). The study of climate change has been an example *par excellence* of post-normal science, which means that scientific expertise has been integrated with the political process right from its inception at the 1992 Earth Summit. Ever since, climate scientists have been challenged to find a balance between maintaining scientific objectivity (Shi, 2004), and providing tangible policy advice, for example in the form of thresholds or confidence statements. In contrast, energy availability has received very limited public attention, with analyses being polarised between the official predictions by the International Energy Agency (IEA, 2008) and "mavericks at the fringes or outside mainstream scientific discourse" (Friedrichs, 2011, p. 475). The public and scientific debates on issues relating to energy availability and security¹ are therefore less advanced than the debate on climate change (e.g., Helm, 2011; Murray and King, 2012).

An additional challenge to the energy debate is that there is no agreed term to capture its many dimensions (Demski, 2011). Increasingly, the term 'energy security' is used by both politicians and scientists, but even though there is agreement that energy security implies an energy supply that is reliable, adequate, and affordable (Chester, 2010), the term still holds many meanings and this impedes clear policy discussions. This paper uses the term energy availability, as it implicitly includes the possible peaking of global oil production. The IEA provides an annual World Energy Outlook (WEO) with forecasts of energy supply and demand. The IEA has been criticised for basing its forecast on the underlying assumption that market mechanisms always ensure that supply meets demand (Friedrichs, 2011), a common approach in neoclassical (environmental) economics (Venkatachalam, 2007). In their critique of the 2008 WEO, Aleklett et al. (2010) conclude that future world crude oil production is unlikely to return to 2008 levels, suggesting that the actual production of oil in 2030 (75.8 million barrels/day) will fall short of the officially forecasted 101 Mb/d. The severe economic and societal

¹ Energy security is a cognate consideration of more general debates on energy availability that include broader aspects such as geological constraints, vulnerability to terrorism, infrastructure bottle necks, and short term energy disruptions for various reasons.

implications of such a deficit have been discussed for a wide range of scenarios and contexts (Bailey et al., 2010; Becken, 2011; Friedrichs, 2010; Hirsch, 2008).

Some observers claim that the finite nature of global fossil fuel supplies is the overriding constraint to economic development, while others argue that the limited ability of the atmosphere to function as a carbon sink is the principal constraint (Friedrichs, 2011; Verbruggen and Al Marchohi, 2010). Whatever the case, it is clear that the continuous burning of fossil fuels exacerbates both problems. Carbon dioxide emissions from fossil fuel combustion are the main driver of climate change, with CO₂ emissions having grown by about 80% between 1970 and 2004 alone (IPCC, 2007). Recent climate change studies have shown that the IPCC findings from 2007 are conservative, and that many components of the climate are changing faster than expected (Allison et al., 2009). The current trend in emissions therefore demands bold policies. The increasing recognition of energy availability and climate change as twin challenges, for example in terms of technological innovation (Bauen, 2006) or renewable energy source planning (Leggett and Ball, 2012), is a promising development. Integrated approaches to addressing these problems would reduce perverse outcomes in which, for example, the reduced availability of cheap oil would make more carbon-intensive coal and non-conventional resources (e.g., tar sands) more financially attractive (Verbruggen and Al Marchohi, 2010).

2.2. Awareness and Perceptions

Public opinion and concern about climate change have been well documented across the world for some time (e.g., Leiserowitz et al., 2010a; Lorenzoni and Pidgeon, 2006; Upham et al., 2009). Overall, levels of awareness of climate change are very high (e.g., 71% of Britons are very or fairly concerned; Reser et al., 2011), although there has been a decrease in concern in the last few years. For example, a study found that 63% of citizens in Hamburg, Germany, considered climate change to be a serious or very serious threat in 2008, but this percentage fell to 44% in 2011 (Ratter et al., 2012). Decreased public concern, which has also been observed in other parts of the world (e.g., Leiserowitz et al., 2010b), has been explained by information fatigue, recent weather events, and political failures. Recent research specifically highlights the negative effects of the global recession and high unemployment rates on public concern about climate change (Scruggs and Benegal, 2012).

In contrast to climate change, research on people's perceptions of energy availability is limited (Corner et al., 2011), especially in relation to long-term shortages as opposed to short-term issues such as blackouts (Longo et al., 2008). Some research explores attitudes towards different energy sources, for example identifying that coal is perceived as most harmful (Truelove, 2012), and solar and wind energy are generally viewed positively (Corner et al., 2011). Further research has been undertaken on consumers' willingness to pay for renewable energy and related policies (Longo et al., 2008). A recent public poll found that the vast majority of Americans believe that the energy situation in the United States is very or fairly serious, and just over half believe that the US will face serious energy shortages in the next five years (PollingReport, 2012).

2.3. Environmental Behaviour

Research into understanding people's energy- or climate change-related behaviour has a long tradition. Improving the understanding of pro-environmental behaviour, for example in relation to which behaviours matter, what antecedents are significant, and what interventions are effective (Steg and Vlek, 2009), will greatly assist policy implementation and societal change. While it appears that individuals are not consistent in their environmental behaviour, it has become apparent that a number of factors, including risk perceptions and concerns, attitudes, knowledge, norms, empowerment, and context, seem

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