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Implementing energy efficiency policy in Croatia: Stakeholder interactions for closing the gap

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HIGHLIGHTS

- We analyse attitudes of Croatian stakeholders towards energy efficiency.
- Responses are gathered from public institutions, businesses, CSOs and media.
- Lacking political will and public dialogue dominantly cause and maintain the gap.
- Participative policy making and clear leadership in implementing are needed.

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ABSTRACT

Despite the substantial efforts made to develop sound energy efficiency policies, the desired effects in terms of achieved energy savings are lacking. This phenomenon is known as the energy efficiency gap and has been extensively investigated in the literature. Barrier models to explain the gap are primarily oriented towards the technical aspects of energy efficiency and often disregard its social aspects. The aim of our research was to identify the social structures that play a prominent role in moving society towards greater energy efficiency, to investigate their perceptions of the levers for and brakes to greater participation in the implementation of energy efficiency measures and to provide recommendations for policy enhancement. Four groups of stakeholders were identified: public institutions, businesses, civil society organisations and the media. A survey was administered to 93 representatives of these groups in Croatia. The results indicate that to encourage the society to adopt energy efficiency improvements, it is crucial for public institutions to play a leading role with the support of strong and visible political commitment. The level of benefit recognition among all groups is weak, which together with the slow progression of dialogue between and within the analysed groups is preventing full policy uptake.

1. Introduction

Energy efficiency (EE) has been recognised as the fastest and most cost-effective tool to decouple economic growth from increased energy consumption and reduce greenhouse gas (GHG) emissions by decreasing the amount of energy required to accomplish a particular amount of an actual energy service (Wuppertal Institute, 2000; IEA, 2008). Moreover, an increasing dependency on energy imports is becoming a major risk for many economies, including Croatia.

Croatia is a Southeast European country with approximately 4.5 million inhabitants. Croatia supplies less than 50 per cent of its primary energy needs, amounting to 8.6 Mtoe, from its domestic energy sources. If the current trends in energy supply and demand continue, Croatia will import over 70 per cent of its primary energy needs by 2030 (Ministry of Economy, 2011). Additionally, total primary energy intensity in Croatia was 14.6 per cent above the European Union average in 2010 (Ministry of Economy, 2011), indicating there is still significant untapped potential for energy savings. Croatia has declared that EE is a central pillar of its overall energy strategy and adopted policies to stimulate increased EE with the aim of achieving a final energy saving target of 470 ktoe by 2016 (Ministry of Economy, 2010) in line with EU energy policy and the Energy Services Directive. Croatian EE policy is directed at the end-use sectors: households, services, industry (including agriculture and construction) and transport, which account for 30.4, 11.9, 25.0 and 32.7 per cent of final energy consumption, respectively. However, progress in achieving the desired additional energy savings is lacking, as demonstrated in the 2nd national energy efficiency action plan (Ministry of Economy, 2011a). Namely, the additional energy savings achieved in 2010 by implementing policy measures amounted to only 53.6 per cent of the target established for 2010.

Therefore, the conclusion of Erhard-Martinez and Laitner (2008) is very true for Croatia: despite the formal recognition of EE, it is the least visible and least understood aspect of energy

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policy. The EE gap has yet to be bridged. A number of brakes in all parts of the society hinder various stakeholders from playing an active role in promoting and implementing EE measures and realising the potential energy savings.

This paper was prepared based on a survey administered to representatives of different stakeholder groups on their attitudes related to EE. The aim of the survey was to better understand the brakes and levers for EE improvements in Croatia and provide recommendations accordingly.

2. Theoretical background

The phenomenon of the 'energy efficiency gap' or 'energy paradox' is well known and broadly discussed in the academic literature (Brown, 2001; Weber, 1997; Sorrell et al., 2004; Croucher, 2011; Schleich, 2009; Palm and Thollander, 2010). The 'gap' has been defined as the paradox of the gradual diffusion of apparently cost-effective EE technologies (Jaffe and Stavins, 1994). As explained by Eyre (1997): investments in EE are consistently observed to fall below the levels that informed analysts assure policy makers are both possible and economical. These definitions and explanations of the gap rely on a techno-economic perspective on EE, and studies in the literature have primarily and repeatedly attempted to explain the gap using the 'barrier' approach.

The concept of 'barriers' originates in the microeconomic theory of the market and distinguishes 'genuine' market failures from other non-market failures. The types of market failures are summarised in Table 1. They occur when a market fails to efficiently produce goods in a manner that optimises societal benefits. All other 'barriers' presented in Table 1 are in the domain of non-market failures, i.e., they do not conflict with market behaviour as understood by economic theory. Some authors have argued that only market failures require policy interventions (Dennis, 2006), while others dispute this approach and call for policy interventions that stimulate behavioural changes.

Most recently, the 'barrier' approach has been criticised by sociologists for two main reasons. First, the term 'barriers' connotes an individualistic view of action (Shove et al., 1998) that should be reconciled with a top-down approach (Jensen, 2005), i.e., governments have a legitimate part to play in supporting efforts to correct these and other market imperfections (Guy and Shove, 2000). Second, the term 'barrier' suggests that they can be 'jumped over' one at a time, which does not reflect the interactions between them (Bartiaux, 2009). Therefore, several other terms have been suggested, e.g., 'brakes' (Bartiaux et al., 2006), to account for the socio-technical context in which energy-related practices and changes take place. We have embraced the term 'brakes', as it conforms to our belief that social roles and interactions are just as important for the success of EE policy as technical, economic and behavioural considerations. In this respect, society must continually and simultaneously 'release of the brakes' to change energy-related behaviours, rather than 'jumping over' individual barriers one at a time.

The gap, as originally defined, implies the existence of several potential energy savings categories. Technical potential is not achievable due to the lack of cost-effectiveness, while the remaining economic potential is not achievable due to the existing brakes classified in one of the categories specified in Table 1. Market forces will achieve some of the economic potential, and the utilisation of the remainder needs to be stimulated by public policy, hence we may call it 'policy potential'. However, the typical policies, which address the brakes and provide levers, have failed to achieve this potential. Therefore, we introduce the term 'social

Table 1
Brakes inhibiting energy efficiency (based on (Brown, 2001; Weber, 1997; Sorrell et al., 2004; Croucher, 2011; Schleich, 2009; Palm and thollander, 2010; Jaffe and stavins, 1994; Eyre, 1997)).

Brakes	Typology	Effects	Solutions
Approach based on economic theory			
Incomplete (imperfect) information	Market failures (imperfections in the operation of the market)	Affects both the demand and supply sides of the EE market, leaving the demand side underdeveloped and the supply side disinterested; Another effect is demonstrated by the principal/agent problem, which occurs when the holder of information is unable to convey it credibly to the final beneficiary (e.g., building landlord/tenant)	Dedicated promotional and informational campaigns and tools (reduce transaction costs related to information gathering); Energy labelling of appliances, equipment, buildings and cars; Informative billing and smart metering; Technical assistance programmes (energy auditing)
Public goods		EE serves the public interest, as it delivers better living conditions, less environmental pollution and lower energy costs – however, markets tend to undersupply public goods as they are unpriced	Government support and public –private partnerships on R&D for energy efficient technologies; Education and training programmes; Voluntary agreements with manufacturing industries
Externalities		Energy prices do not reflect the adverse environmental and human health effects of energy consumption nor the impacts of political instability related to the energy supply; Positive externalities of improved EE should also be taken into account	Correct energy pricing and taxation; Environmental fees; Tax credits for EE investments; Minimal efficiency standards; Utilising purchasing power (green public procurement and consumer awareness)
Market power (imperfect market structures)	Market barriers (problems with market development)	Persistence of monopoly effects in the energy sectors prevent the development of truly competitive energy markets and restructuring utilities to become energy service companies; Improper energy price structures based on historical average costs and not on short-run marginal costs	Transforming utilities to become energy service companies; Smart metering and real-time pricing; Smart appliances
Incomplete markets		EE is not a product itself, but an attribute of a product intended to provide some other service – EE is not treated as an optional item (as a consequence of imperfect information)	Implementing market transformation programmes
Access to capital (liquidity constraints)		Low credit worthiness of companies/individuals makes it difficult or impossible to invest in energy efficiency	(Revolving) funds (as an initial driver of demand for energy efficient solutions); Stimulating energy services (ESCO) market
Approach based on concepts from psychology			
Priority	Organisational	Low share of energy in total costs; Energy not perceived as a manageable cost or as a strategic option	Inducing stronger political and managerial support
Bounded rationality	Behavioural	Optimal decisions will not be made regardless of the provision of sufficient information for reasons not strictly related to cost-effectiveness (consumer preferences)	Creating energy and climate literacy (a top educational priority in schools and in the public discourse)