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Comparative assessment of policies targeting energy use efficiency in Lithuania

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ABSTRACT

Energy efficiency is an important issue of European climate policy. Energy efficiency is measured by the energy intensity of an economy showing how much energy (expressed in kilograms of oil equivalent, kgoe) is used for the production of one unit (1000 EUR) of GDP. There are huge differences between EU old and new member states. Though there are some trends of energy intensity convergence between EU member states however the achieved decrease in energy intensity is attributable mostly to a loss of energy-intensive industrial capacities in the transformation process. There is a crucial difference between whether the energy intensity of a given economy decreases as a result of downscaling energy-intensive activities or because of increased energy efficiency in activities that are maintained. It is important to make sure that this distinction is made within the policy framework which at present is not the case. The aim of the paper is to assess policies targeting energy intensity decrease in Lithuania in terms of efficiency, effectiveness and efficacy and to select the best policies able to increase energy efficiency in activities that are maintained.

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1. Introduction

The energy efficiency policies here examined are just one type of energy policy, namely that serving environmental goals of less pollution and less resource depletion by enabling the same economic benefit with less input. Energy efficiency is essential in making the world energy system more sustainable. It reduces local air pollution and global climate change, while improving the security of energy supply and making modern energy affordable for the entire world population. In this way energy efficiency is essential to attenuate the impact from global warming. Efficiency improvements can drastically alter primary energy demand. In the last decades, energy efficiency has already made considerable progress; without the implemented measures energy use would already have been 50% higher than today. But as economies in the world grow, the world energy demand increases dramatically.

For evaluating the success of policies regarding energy efficiency three main categories can be distinguished: effectiveness, efficacy and cost efficiency. The effectiveness of policies is determined mainly by whether the right targets were set and the right measures were taken. The achievement of the set targets shows the efficacy. The evaluation therefore should focus on those two issues

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to determine whether the attained impact relates to the desired effects. The overall goal of introducing policies is to reach targets in the most economical way. Regarding the evaluation this means that the measured effects should be weighed against the deployed means, which in most cases means the costs. In this regard it could be helpful to compare the results and perform a benchmark with other policy instruments.

The aim of the paper is to assess energy efficiency policies in Lithuania in terms of effectiveness, efficiency and efficacy. The main tasks to achieve this target are:

- To analyze EU policy targeting increase in energy efficiency.
- To overview energy sector and energy intensity trends in Lithuania.
- To analyze policies and measures targeting energy efficiency increase in Lithuania.
- To carry out comparative assessment of policies targeting energy efficiency in Lithuania.
- To select the best energy efficiency policies for Lithuania lop recommendations for their implementation.

2. EU policy targeting increase in energy efficiency

The EU has set itself the objective of achieving 20% primary energy savings in 2020 and has made this objective one of the five headline targets of the Europe 2020 strategy for smart, sustainable and inclusive growth [1]. The energy efficiency target is part of one of the five headline targets under strategy 2020. It consistent with the Europe 2020 flagship initiative for a resource-efficient Europe and complementary with EU climate policy. Threfore energy efficiency is one of the central objectives for 2020 as well as a key factor in achieving our long-term energy and climate goals. Energy efficiency is the most cost effective way to reduce emissions, improve energy security and competitiveness, make energy consumption more affordable for consumers as well as create employment, including in export industries.

On 10 January 2007 the commission adopted an energy and climate change package, calling on the Council and European Parliament to approve: an independent EU commitment to achieve a reduction of at least 20% in the emission of greenhouse gases by 2020 compared to 1990 levels and the objective of a 30% reduction by 2020, subject to the conclusion of a comprehensive international climate change agreement; a mandatory EU target of 20% renewable energy by 2020 including a 10% biofuels target. The EU Green paper on European Strategy for Sustainable, Competitive and Secure Energy (SEC (2006) 317) sets the main priorities for EU energy strategy: competitiveness of the EU economy, security of supply and environmental protection. These objectives should help to address central policy concerns such as job creation, boosting overall productivity of the EU economy, protection of the environment and climate change. The first point of new amended EU Energy strategy adopted in 2010 focuses on achieving an energy efficient Europe [2].

The Commission's Green Paper on energy efficiency COM (2005) 265 stresses the importance of energy efficiency improvement for the controlling of demand growth and security of supply. According to estimates, the economic potential for improving energy efficiency in 2010 for all sectors combined is 20% of the total annual primary energy consumption of the current level. There are several directives aiming to implement Commissions Green Paper on energy efficiency: 2006/32/EC Directive on energy end-use efficiency and energy services, 2004/8/EC Directive on the promotion of cogeneration, Directive 2010/31/EC on the energy performance of buildings and the Directive 2010/30/EU on energy labeling.

The 2006/32/EC Directive on energy end-use efficiency and energy services sets the targets for EU member states to reduce final energy consumption by 9% during the nine year period until 2015 and proposes set of measures to achieve these targets: voluntary agreements, white tradable certificates, energy service obligations, energy audits etc. This directive requires Member States to submit the Action Plans describing the results of achieving the energy saving targets. The Action Plan also presents an overview of the current energy consumption situation and describes newly adopted and envisaged energy efficiency measures aimed at the improvement of energy efficiency that must ensure the achievement of the national energy savings target for 2016.

2002/91/EC Directive on the energy performance of buildings sets target to realize a savings potential of around 22% by 2010 for energy used in heating, air-conditioning, hot water and lighting. This directive was repealed by 2010/31/EC directive. According this Directive Member States shall take the necessary measures to ensure that minimum energy performance requirements for buildings or building units are set with a view to achieving cost-optimal levels. The main measures proposed for achieving this target are: improved standards, certification of buildings and information on energy consumption in buildings disclosure, subsidies form EU Structural Funds for energy efficiency improvements in public buildings, the incentive billing of residents of the buildings, soft loans for energy efficiency improvements in multi-flat buildings etc.

2004/8/EC Directive on the promotion of cogeneration based on a useful heat demand in the internal energy market aims to increase energy efficiency and improve security of supply by creating a framework for promotion and development of high efficiency cogeneration of heat and power based on useful heat demand and primary energy savings taking into account the specific national circumstances especially climate and economic conditions. The strategic goal of EU-15 is to double the share of electricity produced by combined heat and power pants (CHP) by 2010. The different mechanisms can be applied to support cogeneration at the national level, including investment aid, tax exemptions or reductions, green certificates and direct price support schemes, information disclosure etc.

Directive 2010/30/EU on energy labeling establishes a framework for the harmonization of national measures on end-user information, particularly by means of labeling and standard product information, on the consumption of energy and where relevant of other essential resources during use, and supplementary information concerning energy-related products, thereby allowing end-users to choose more efficient products.

In 2008, the EU adopted the Strategic Energy Technology Plan (SET-Plan), now in its implementation stage. This plan is the energy technology policy of the European Union. Despite having been initially focused on power technologies, the European Commission has now received the mandate to investigate the role of technological innovation to achieve a more efficient energy intensive industry and with less CO_2 emissions [3].

The EU also has an indicative cap in the 'Energy services directive' (2006/32/EC, ESD): each member-state should cut final energy consumption in sectors not covered by the Emissions Trading Scheme (ETS) by 9% (from the average consumption over the previous 5 years) by 2016. This target is not adjusted for differences in temperature (more fuel is used for heating in extremely cold winters and more electricity for air conditioning in hot summers) or industrial changes such as shifts from manufacturing to services. Generally, services sectors use a lot less energy per unit of output than those in manufacturing. Most member-states' economies have shifted toward less energy intensive sectors. The EU needs to focus on increasing not only the efficiency with which energy is consumed, but also the way it is supplied. The