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Analysis of the renewable energy promotion in Lithuania in compliance with the European Union strategy and policy

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ABSTRACT

The article outlines the analysis of the renewable energy sources (RES) promotion in Lithuania in compliance with the European Union (EU) strategy and policy. Energy consumption from RES in 2005, progress in 2011 and targets for 2020 years for Lithuania and the EU-27 countries are compared. Lithuanian targets of RES shares are the following: total final energy consumption – 23%, 10% – in transport, 20% – in electricity consumption, and 60% – in district heating. The overview of available RES support instruments for electricity, heat and cooling, and transport in Lithuania and EU countries is carried out. Lithuanian RES policy, strategic directions, objectives and tasks are discussed. The recent tendencies of energy use in Lithuania are revealed. The distribution of gross inland and renewable fuel and energy consumption for the period 2005–2011 is shown. Expected gross final energy consumption for heating and cooling, electricity and transport sectors, and RES contribution to each sector of the final energy consumption up to 2020 are foreseen. A feed-in tariff system in Lithuania, the measures for power and heat generation, and the support schemes to promote the use of energy from RES in transport are described. The measures taken to ensure availability of necessary funding to achieve the Lithuanian targets for the share of RES are shown.

Contents

Abbreviations: CHP, combined heat and power; EAFRD, European Agriculture Fund for Rural Development; EC, European Commission; EU, European Union; GHG, greenhouse gases; IC, installed capacity; ktoe, kilotons of oil equivalent; LEI, Lithuanian Energy Institute; LEIF, Lithuanian Environmental Investment Fund; LTL, Lithuanian Litas (1 LTL=0.2896 €); NCC, National Control Commission; PV, photo voltaic; RES, renewable energy sources; RES_E, renewable electricity; RME, rapeseed methyl ester; RPS, Renewable Portfolio Standards; UK, United Kingdom; USA, United States of America

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1. Introduction

1.1. Promotion of use the renewable energy in Europe

The Directive 2009/28/EC on promotion of the use of energy from renewable sources (RES) sets the overall target to reach 20% renewable energy in gross final energy consumption in 2020, [1]. This target is bound with individual Member State targets. Lithuanian target is to reach 23% of RES in gross final energy consumption till 2020.

Energy consumption from RES in 2005, progress in 2011 and targets for 2020 for Lithuania and the EU-27 countries are shown in Fig. 1 [2].

Reaching these targets will require a huge mobilization of investments in renewable energies. In order to improve financing and coordination, the Directive requires: a better use of structural funds and framework programmes; a better and increased use of funds from the European Investment Bank and other public finance institutions; a better access to risk capital; a better coordination of Community and national funding and other forms of support; a better coordination in support of renewable energy initiatives whose success depends on action by actors in several Member States and other ones.

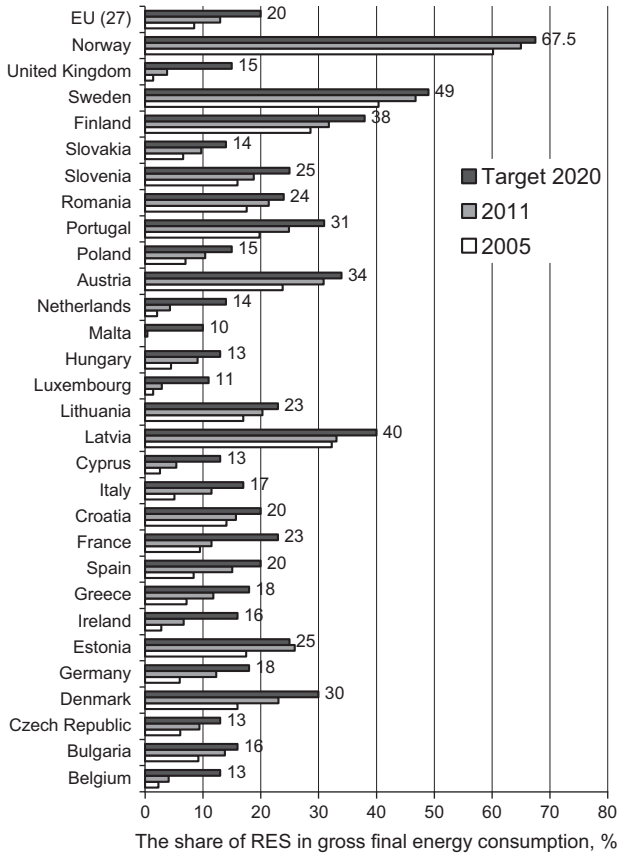

Fig. 1. Energy consumption from RES in 2005, progress in 2011 and targets for 2020 for Lithuania and the EU-27 countries.

The most important obstacles for faster growth of RES usage in Lithuania were high investment cost, long pay-back periods for projects and a lack of financial resources necessary to implement governmental policies [3]. The analysis of the renewable energy directive by a techno-economic optimization model was made by experts in [4]. This model was developed especially for Norway and set a possible ways to reach its RES target (67.5%) for 2020. Also, it is very valuable for other EU countries by setting their individual targets.

The status of current RES deployment, policies and barriers in the EU-27 member states and compares it to the required to meet the 2020 targets were analyzed in [5]. It was emphasized that European RES deployment and policy have strongly progressed in recent years. Despite this, Europe will need additional policy effort to reach the 2020 target. Critical success factors included implementation effective and efficient policies that should attract sufficient investment and reduce administrative and grid related barriers.

The analysis of the renewable energy use in European Union (EU) was investigated by many researchers [6–10]. Proposed measures on renewable heat and electricity, biofuels and energy efficiency have achieved important results but lack to bring sustainability, security of supply and competitiveness. No one element of the policy provides all the answers because they must be taken together as a whole. The status and perspectives of renewable energy policy and deployment in the EU and what is needed to reach the 2020 targets must be established. Also other problems of renewable energy as well as the renewables portfolio, individual preferences and social values towards RES technologies and implementing a biofuel economy in the EU and future perspectives for the next generation biofuels must be studied carefully [11–13]. Different scenarios of high penetration renewable energy showed that the use of renewable energy was attractive in many EU Member States [14–17].

Strategic analysis of diffusion of RES in Nordic countries [18] were related to security of energy supply, growing energy demands, limitations of fossil fuels, and threats of disruptive climate changes and were highlighted that successful diffusion of RES requires consideration to many factors including social, economic, and technical ones. The challenges, prospects, environmental impacts and policies for renewable energy and sustainable development in Greece, Germany and other countries were described in [19–21]. The challenge for renewable policy is to find the right balance between installing large scale renewable energy capacity today, and waiting until research lowers their cost tomorrow. It is evident that using renewable energy today is generally more expensive comparing to using hydrocarbons, but when the costs climate change are factored in the gap is narrowing. How the renewable electricity policies promote renewable electricity generation and the conditions and costs for renewable electricity grid connection were overviewed