

20th International Scientific Conference Economics and Management - 2015 (ICEM-2015)

## The Impact of Renewable Energy on the Economy of Lithuania

Ignas Valodka<sup>a</sup>, Gitana Valodkienė<sup>b,\*</sup>

<sup>a,b</sup> *Kaunas University of Technology, K. Donelaicio str. 73, Kaunas LT-44239, Lithuania*

---

### Abstract

The research purpose is to investigate negative and positive impacts of renewable energy sources (RES) on the economy of Lithuania on the basis of theoretical analysis, empirical investigation of significance of renewable energy for the economy and as well as possible threats for energy supply sources. The research is based on literature study, statistical and comparative research. Strategy for RES development has to be formed for a long-term period; this strategy has to be created by independent scientists not related to traditional energy producing business structures; it is necessary to involve into energy sector small investors so achieving bigger decentralized energy production based on RES expansion and parallel getting higher security of the energy sector.

© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of Kaunas University of Technology, School of Economics and Business

*Keywords:* Renewable energy sources; Wind energy; Lithuanian economy; Energy security; Energy strategy.

---

### Introduction

The insurance of the energy security is one of the most important national interests of a state and is the most important national security factor of a state. Renewable energy sources (RES) and their increasing utilization in many countries worldwide is a major energy policy strategy (Blazejczak et al., 2014). The relationship between the development and the use of RES and the characteristics of national economies has frequently been investigated and there are a wide range of approaches observed in the literature and publications (Kocsis et al., 2014). According to Lukaitytė (2011), based on common standards, a state is secure, when it imports 10-15 percent of energy, meanwhile Lithuania imports around 77 percent of energy. According to energy security review done in 2013 Lithuania is indicated as energy not secure country (Budreckaitė, 2014). National energy strategy of Lithuania

---

\* Corresponding author. Tel.: +370-37-300576.

E-mail address: [gitana.valodkiene@ktu.lt](mailto:gitana.valodkiene@ktu.lt)

declares that energy security covers the totality of the conditions when traditional and renewable energy sources diversity is ensured, independence of monopolistic supplier dictate and the energy access to the consumers at an affordable price at competitive energy market is granted (Nacionalinė energetikos strategija, 2011). International Energy Agency defines energy security as the uninterrupted availability of energy sources at an affordable price. Different authors distinguish different, positive and negative, impacts of renewable energy on the economy of Lithuania. That is why more detailed analysis of this impact is needed.

## 1. RES Development problems in Lithuania

Energy sources usually are classified to non-renewable (traditional) and renewable. Non-renewable energy resources mainly are used worldwide. Non-renewable energy sources are such as nuclear energy, oil, natural gas, oil shale. Renewable energy sources are natural resources that appear from natural processes. These are wind, biomass, sun, geothermal and water energy (Vainius, 2008).

The development of RE is an option for many countries seeking to reduce dependence on imported petroleum and to reduce greenhouse gas (GHG) emissions at the same time. The main incentive to develop RES for industrialised countries is the decrease of carbon dioxide emissions in order to mitigate climate change, to increase energy security and strong promotion of structural changes in the economy (Edemhofer et al., 2012).

Klevas and Štreimikienė (2006) present the main market barriers and shortcomings, that prevent further development of RES, and why state measures for market barriers bypass and removing are needed. The main market barriers, preventing the development of RES are of these types:

- Commercial barriers due to new technologies competitiveness with conventional technologies;
- Price distortions due to the existing subsidies and unequal tax burden of RES technologies;
- Market failures assessing public benefits from RES;
- Market barriers, such as inadequate information, limitations to access capital and institutional barriers

Recently European Union is promoting cross-border networks, single market trade strengthening tendencies and the integration of Lithuania electricity system to European electricity power coordination system. The launching of the power exchange “Nord Pool Spot” in Lithuania, that has become one of the most important electricity market integration steps, that created equal conditions for competition, and the cross-border networks with Sweden (“NordBalt”), Poland (“LitPol Link 1”), led to lower imported electricity prices, what led to cheaper prices than the prices of produced in Lithuania electricity. This means that to import electricity into Lithuania is cheaper than to produce it by themselves (Junghans, 2015). This is becoming a reason for the government to import energy rather than to produce it by developing renewable energy.

Even if the energy problems can be solved only at the international level, by cooperating with other states, primarily every country first has to ensure the domestic production, storage and reservation capabilities (Bauman, 2008). Furthermore, before making decisions regarding the further development of renewable energy, should be taken into account not only its impact on the energy prices in the nearest future, but also is necessary to estimate the domestic energy production macroeconomic impact on GDP, employment and the external costs (for example, climate change costs), which often are ignored.

Currently, energy produced from RES in Lithuania composes around 23 percent of the total energy consumption. Most common and widely used sources of renewable energy in Lithuania are wind energy and biomass. At present, wind power produces nearly a quarter (23,6 percent) of the total electricity produced in Lithuania and comprises 7 percent of the total electricity consumption in Lithuania (Pikšrys, 2015). The biggest part of imported electricity comes from Russia, 70 percent of the total electricity import. Production of wind energy is spreading rapidly (Table 1) and the wind energy park is producing more and more electricity. Wind plants average efficiency in Lithuania is the highest between the Baltic States equals to 27 percent and in the nearest future is projected to achieve 40 percent. Investments in wind energy projects in Lithuania average payback period is 10-12 years. At the time of the construction of new power plants energy produced will be purchased at the price of 7 cents per kilowatt-hour. Cheaper electricity can produce only Kaunas Hydroelectric Power Plant (Sagatauskas, 2014).

Download English Version:

<https://daneshyari.com/en/article/1109091>

Download Persian Version:

<https://daneshyari.com/article/1109091>

[Daneshyari.com](https://daneshyari.com)