

## Chapter 49

# Energy Policy Issues in Turkey: Renewable Energy Production and Economic Growth Nexus

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### ABSTRACT

*Energy is the source of development of the mankind and an indispensable input for economic growth. Currently, most of the energy consumed in the world is composed of fossil fuels which are not environmentally friendly and reliable since their prices are volatile and their supply compels importing countries dependent on energy exporting countries. Thus, a good remedy to reduce fossil fuel dependency is to utilize more renewable energy resources. Renewable resources can be replenished quickly, are almost infinite and would lead a country to sustainable development. The Republic of Turkey is a net importer of energy. The diversification of energy sources and supply security is of great importance for it. Thus, the objective of this study is to analyze the relationship between renewable energy production and economic growth in Turkey by using Johansen Cointegration Test, Vector Error Correction Model (VECM), Granger Causality Test and the Augmented Dickey-Fuller Test (ADF). Consequently, both long run and short run a casualty running from GDP growth to renewable energy production is determined in the study.*

## **1. INTRODUCTION**

The volume of energy consumption and its combination is fundamental for the economic development and social wellbeing of a country. However, today the energy consumption pattern in the world is mostly not sustainable and environmentally friendly owing to its hydrocarbon inception. Amounting hydrocarbon energy usage in modern life, increasing volume of population and pollution are considerable issues today. Also, the prices of fossil fuels are variable and not dependable in global markets and they are depleting continuously. Therefore, one could state that hydrocarbon sources are not sustainable and secure. Yet, sustainability of energy is the key to economic and industrial development. Sustainability of energy could be defined as secure, continuous and dependable form of energy which is conducive to environmental protection and economic growth (Öztürk, Yüksel, 2016; Zeb et al., 2014).

The amount of hydrocarbon sources is diminishing and their prices are volatile. This complicates the obtainment of sustainability which can be provided with continuous economic development with energy efficiency, also benefitting the environment positively too. The issue of using green energy and green economy has been gaining increasing importance along with global warming and greenhouse effect. Furthermore, transforming the hydrocarbon fueled economic system to a green one and securing green efficiency are requisites to sustainable development. The reduction in CO<sub>2</sub> emission and saving financial resources by the utilization of green energy would boost the economic and industrial structures of a country. Therefore, the composition of fuel resources and securing a balance between fossil and renewable sources is of great importance for the wellbeing of a society, economic improvement and sustainability (Zeb et al., 2014; Chang et al., 2015; Öztürk, Yüksel, 2016). Furthermore, the aim of this study is to investigate the energy issues, energy and renewable energy production and economic growth nexus within the Turkish case depending on credible national and international sources and data.

## **2. ENERGY ISSUES, RENEWABLE ENERGY AND SUSTAINABILITY**

21<sup>st</sup> century is the age of continuous development of countries and a period of great breakthrough with respect to economic developments, technological improvements and differentiating realities for the mankind. Within this development process, energy is the indispensable factor to sustain the improvement continuum of nations. Especially, fossil fuels have been the prominent form of energy for decades all over the world as to provide for the necessities of people, development of industries and sustainability of state policies. Yet, the pervasive spread of the wide energy consumption activities all over the globe has brought about significant concerns. First, the fossil fuel sources are not infinite in the world. Second problem related to the depletion of fossil fuels is the increasing volume of greenhouse gases which cause global warming. Third, the utilization of fossil fuels may bring about resources dependency (Sebri, Ben-Salha: 2014; Shahbaz et al., 2015).

These important problems mentioned above requires the search for a remedy which is the utilization of renewable energy sources (RESs). If managed and used suitably, RESs could be the future of energy for the mankind. Renewable energy is the continuously regenerating form of energy supplied from solar, wind, hydro, geothermal, tide, wave, biomass and waste. Conventional sources of fuel are finite, not dependable, have negative effects on environment and not sustainable. On the contrary to this from of fossil fuels, RESs are clean, safe, not contaminating and inexhaustible. That's why, it should be just natural that the usage of the RESs is fast developing in the world in order to ensure sustainable

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