


Chapter 3

Environmental Solutions and Alternative Policies to Energy Crises on the Basis of Renewable Energy Production and the Global Renewable Energy Market

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ABSTRACT

In the last two decades, the world has been under the influence of various crises experienced by countries trying to meet the increasing energy demand, especially after the Second World War, using exhaustible resources. In addition to the relations, conflicts, and disagreements between countries, regions, and economic cooperation, the fact that global warming is becoming a climate crisis more and more every day has forced the energy market to seek different quests. This study blends critical theoretical information, such as how and to what extent renewable energy sources can be used based on sustainable economic conditions and how much potential they can offer, with practical examples and suggestions. This study will likely provide guiding implications for decision-makers in the economies of countries that shape the world energy market in the future and will present some innovative ideas for future studies in this field.

INTRODUCTION

Energy, in terms of both the economic system, the individual, and the mass order, is a phenomenon that is on the agenda in many aspects of today's world, mainly due to its various critical features such as being an exhaustible resource, substitutability, supply costs, and sustainable qualities. In order to create a

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sustainable world order, renewable energy sources and sustainable energy policies, which have become a concept that all societies should emphasize, provide efficient production and consumption of conventional energy sources and minimize the harmful effects of fossil fuel-based energies on the environment; has brought the transition to clean and inexhaustible energy sources on the agenda. Following the industrial revolution, especially after the Second World War, Western countries' rapid economic growth and increasing energy demand gained tremendous momentum, especially with the end of the Cold War (Chandler, 2018). Although the concept of "*Global Warming*," which came to the fore in the 2000s, is hesitantly followed by many developed and developing countries, it seems that global warming, ignited by the uncontrolled release of high carbon released by countries while producing energy into the atmosphere, will cause severe problems for the world shortly (Stiglitz, 2011). The problems of global warming and environmental pollution as a result of the fact that a significant part of the world's energy demand is met from fossil fuels today, and various projections that fossil fuels may be depleted in the not-too-distant future have led to the widespread use of renewable energy studies (Bhattacharyya et al., 2021).

Renewable energy, which can be obtained from the sun, wind, water, and hydrogen, is obtained from the existing energy flow in continuously ongoing natural processes (Mohtasham, 2015). However, since resources such as coal, oil, and other fuels obtained from petroleum and natural gas can be depleted in time, or there are various speculations about how long they can last, it is among the non-renewable and unsustainable energy resources. Considering that more than half of the world's energy demand is obtained by using fossil fuels today, it is possible to say that renewable energy sources can play an essential role in reducing the dependence on fossil fuels such as coal, oil, and natural gas and promise potential for the future (York, 2012; Overland et al., 2022).

The interest in renewable energy sources is familiar. The share of electricity produced using lower carbon emission technologies in the total electricity production in the world was 21.5% in 1975, while this rate increased to 39% in 2020 (Statista, 2023). Of course, this rate increased due to the policies aimed at overcoming the climate crisis among countries, especially the Kyoto Protocol, and energy supply and consumption became more massive and politicized. In addition, while the share of solar energy, which was zero percent in the nineties, reached 4% in 2020, the percentage of wind energy increased to 6.7% (Reanin, 2023).

At the end of 2019, the COVID-19 epidemic, which was first seen in China and then in other world countries, and the economic fluctuations after it, and the military war process between Russia and Ukraine in 2022, brought the issue of creating "*strategic reserves*" against possible shocks. In the post-Cold War period, incredibly underdeveloped or developing countries, energy importers whose energy consumption needs are increasing and relatively poor, need more financial resources to create strategic reserves (Chandler, 2018). Therefore, the vulnerabilities of these countries against external shocks still need to cross the critical threshold.

The energy crisis is not a shallow crisis that can only be taken lightly with the exhaustion of fossil resources or the uncontrolled and extraordinary release of greenhouse gases into the atmosphere. Especially after the epidemic, the war environment that broke out in Europe, and the global energy crisis experienced by Western countries, in addition to being global, increased the transportation and production costs of food products and the prices of consumer products at the end of the chain (Schramm et al., 2022).

Not staying away from the studies in the world in these fields depends on both the workforce trained in these subjects and the intensification of research on these subjects in universities. This research aims to approach the global market for the production, supply, and sale of environmentally friendly and renewable energy sources and to approach the global market with an innovative and up-to-date perspective by

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