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Research Article/Araştırma Makalesi

On Energy Efficiency in the Context of Macroeconomic Performance

Makroekonomik Performans Bağlamında Enerji Verimliliği Üzerine

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Abstract

The significance of energy in driving economic growth is crucial within the framework of supply and demand dynamics. The significance of this stems from the energy sector's consistent interconnection with other economic sectors. Energy is a crucial determinant in the process of production. Additionally, it serves as a crucial asset for enhancing the economic well-being of nations. Energy is a crucial component of sustainable development and exerts significant influence in global politics, shaping the developmental status of nations. The energy demand of countries worldwide is indicative of their level of development. Industrialized nations place significant emphasis on this matter, particularly with their demand for affordable and high-intensity energy. The notion of energy efficiency and savings has arisen in tandem with the recognition that resources are finite and global economic activity is expanding. This study has examined the energy gap and the potential consequences of foreign dependency and unpredictable economic growth, specifically in relation to energy efficiency. After conducting an extensive review of the literature, the significance of the energy gap in the overall external output has been emphasized. The emphasis is placed on the notion of efficiency in the energy industry, which is regarded as one of the most efficient methods to decrease this ratio. The study received funding from the World Bank database, specifically utilizing data on energy efficiency and intensity. It was emphasized that the energy gap's external gaps might be diminished to acceptable levels by enhancing efficiency, hence promoting stable growth.

Jel Codes: *C23, O13, Q41*
Keywords: *Energy Efficiency, Economic Growth, External Energy Dependency*

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Öz

Enerjinin ekonomik büyüme açısından taşıdığı önem, arz ve talep dinamikleri bağlamında oldukça belirgin bir rol oynamaktadır. Bu önem, enerji sektörünün diğer ekonomik sektörlerle olan düzenli ilişkisinden kaynaklanmaktadır. Enerji, üretimde kilit bir faktördür. Ayrıca, ülkelerin refah seviyelerini artırmak adına son derece kritik bir kaynaktır. Enerji, sürdürülebilir kalkınmanın temel unsurlarından biridir ve ülkelerin kalkınma seviyelerini belirleyerek uluslararası politikada önemli bir rol oynar. Dünya genelinde ülkelerin ihtiyaç duyduğu enerji, kalkınma durumlarını gösteren bir ölçüttür. Özellikle endüstrileşmiş ülkeler, uygun fiyatlı ve yoğun enerji ihtiyaçları konusunda bu meseleye özel bir önem atfetmektedirler. Kaynakların sınırlı olduğunun farkına varılması ve dünya genelinde artan ekonomik faaliyetlerle birlikte enerjide verimlilik ve tasarruf kavramları öne çıkmıştır. Nihai olarak, bu çalışma kapsamında enerji açığı ve buna bağlı olarak ortaya çıkabilen dışa bağımlılık ve istikrarsız ekonomik büyüme performansı, enerji verimliliği perspektifiyle ele alınmıştır. Konu ile ilgili geniş bir literatür taraması yapıldıktan sonra enerji açığının toplam dış açık içerisindeki payı ve önemine değinilmiştir. Söz konusu payın azaltılmasına yönelik en etkili yollardan bir tanesi olarak görülen enerji alanında verimlilik kavramı üzerinde durulmuştur. Dünya Bankası veri tabanından elde edilen enerji verimliliği/yoğunluğu hakkındaki verilerle çalışma desteklenmiş ve enerji açığından kaynaklanan dış açıkların verimlilik artışı yoluyla kabul edilebilir seviyelere indirilebileceği ve bu sayede istikrarlı bir büyümenin sağlanabileceği vurgulanmıştır.

Jel Kodları: *C23, O13, Q41*
Anahtar Kelimeler: *Enerji Verimliliği, Ekonomik Büyüme, Enerjide Dışa Bağımlılık*

1. Introduction

Energy consumption has become a key metric for assessing the degree of development among countries. Nations are actively striving to develop alternative energy sources in order to fulfill their energy requirements and sustain or enhance their current levels of progress. These endeavors undertaken by nations aim to strategically position both current energy resources and potential energy-producing locations. Conversely, energy has become essential for social existence, not just for growth plans, and it should be available at secure, environmentally friendly, and inexpensive costs when required.

Due to rising industrialization and population growth, biomass energy has gained significant importance in daily life. Consequently, the energy demands of states have escalated, leading to the formulation of policies aligned with this objective. The causes underlying global rivalry in the energy sector are as follows: Moreover, nations endowed with abundant subterranean and metaphysical energy resources have made substantial contributions to their economies through the exportation of such energy sources. Nations that rely heavily on foreign energy sources have had to exert significant efforts to sustain a stable equilibrium in their exports and imports. In pursuit of this objective, they have endeavored to formulate domestic strategies to investigate and extract dependable energy resources, with the ultimate aim of circumventing any potential issues related to external energy supply. One of the main goals of diversifying energy sources and gaining economic independence is to implement new and improved policies.

Due to the growth and expansion of economic activity, it can be asserted that energy has undergone many stages to attain the significance it holds now. The first period spanned from the latter half of the 18th century to the early 19th century. Coal was the predominant energy source throughout this time. The ensuing second stage, characterized by the utilization of electricity, extended until the mid-19th century. The third period, spanning from the mid-19th century to the early 20th century, witnessed the ongoing usage of electricity and the emergence of oil energy as a significant factor. Nuclear energy has played a significant role in shaping and directing national economies since the mid-20th century. In recent times, there has been a significant increase in the utilization of renewable energy sources, to the point that they have become economically viable. The utilization of renewable energy sources in production, coupled with technological advancements, will diminish the proportion of fossil fuels in production and foster sustainable economic expansion. Additionally, it is hypothesized that developing nations, which lack external reliance due to their absence of natural resources, will significantly contribute to their own growth strategies, in conjunction with enhanced efficiency, for the economies of advanced nations.

Enhancing or diminishing the productivity of the available resources is a fundamental goal for both established and developing economies in the context of energy. To achieve this objective, substantial resources are dedicated to research and development endeavors. In contrast, the challenges confronting the economies of underdeveloped nations primarily stem from the inefficient utilization of available energy resources rather than a lack of access to these resources. Less developed countries allocate around 50% of their available energy resources to the industrial sector. To see the significance of savings in this context, consider

the following example: Prior to the 1973 oil crisis, the United States aimed to achieve a 20% savings rate in the industrial sector. However, during the crisis, this target increased to 40%, highlighting the substantial potential for savings. Another illustrative instance is that developing nations consume over 40% more energy to manufacture a comparable product compared to developed nations (TMMO, 335). Energy efficiency is crucial for developing countries due to their constrained allocation of resources to energy sources and their constantly increasing energy demand. Enhanced efficiency is a favorable contributor to economic growth performance.

2. Energy and Growth: Related Literature

The significance of energy, a basic driver of economic growth and development, is currently seeing a growing trend in both the political and economic spheres. Nations that heavily rely on imported energy resources may be seeking a significant remedy, as it plays a crucial role in their productive endeavors.

In literature, economic expansion in developing countries is often a contentious subject. However, it can be observed that, initially, energy efficiency tends to decrease as a result of this growth. Subsequently, the implementation of structural laws might lead to an improvement in energy efficiencies. This can be attributed to the growth of the industrial sector, rising urbanization rates, and limited technological capabilities. Developed countries are very good at saving energy because they follow important building rules, make the best use of their technology, and try to lower energy costs, which are a big part of production costs, by using alternative energy sources.

Research on the correlation between energy and economic growth indicates that the matter has been examined from several perspectives. For instance, certain studies examine the influence of energy costs on economic growth, while others investigate the correlation between energy usage and economic growth.

A quantitative study investigating the correlation between power consumption and economic growth revealed a beneficial impact of energy usage on growth. The work conducted in Turkey has encompassed all industries, and the growth has been bolstered by the rise in value added (Ağır & Kar, 2010).

A separate analysis, encompassing the time period from the 1950s to 2016, investigated the correlation between economic expansion, power usage, and job creation. The findings indicated that there was a rise in employment growth during the short-term examination. Additionally, it was seen that both employment and electricity consumption had a favorable influence on national output in the long term (Polat, Uslu & San, 2011).

A subsequent study, encompassing the datasets between the 1960s and 2011, investigated the correlation between electricity consumption and economic growth, taking into account export and investment characteristics. The findings indicated a direct correlation between the rise in energy usage and economic development, as well as a reciprocal connection between investment and export factors (Altınbaş & Koçbulut, 2014).

Özata (2010) conducted a study that examined the causal relationship between electricity usage and national output. This study, spanning from the 1970s to 2008, determined that there is a positive correlation between national revenue growth and power usage. Kraft & Kraft (1978) conducted a study that utilized data from the United States throughout the 1950s and 1970s to examine the causal relationship between energy consumption and national income. The study's findings indicate a unidirectional positive correlation between national GDP and energy usage. Nevertheless, Akarca & Long's (1980) subsequent analyses did not verify the presence of such a link throughout the same time frame.

In South Korea, Yu & Choi (1985) found a direct correlation between energy consumption and economic growth between the years 1954 and 1976. However, in the case of the Philippines, the analysis showed that energy use had an impact on economic growth without having a reciprocal effect. According to a separate investigation by Soytaş & Sarı (2007) in Turkey, the rise in energy consumption between the 1950s and 1992s directly correlated with an increase in the per capita national GDP.

The relationship between Turkey's national income and energy consumption from 1970 to 2003 was the subject of a separate investigation by Lise & Montroft (2007). The investigation has indicated a favorable correlation between energy use and national income.

Toman & Jemelkova (2003) examined the correlation between energy and economic growth. The basic concept in my work is that there is a positive correlation between economic progress and energy usage. Energy consumption is considered a crucial aspect of economic progress. However, at various stages of development, studies suggest that the correlation between growth and energy consumption fluctuates, either weakening or strengthening periodically. In the initial stages of civilization, energy for houses was derived from biological resources or human labor. However, as development progressed, biofuels and animal power were utilized. At the advanced stage of development, it is acknowledged that as the demand for power and consumption rises, there is a focus on optimizing the utilization of acquired resources.

Shiu & Lum (2003) conducted a study on the Chinese economy that examined the correlation between power usage and real GDP. The findings indicate a unidirectional and favorable causal connection between electricity usage and real GDP.

Yemane (2004) conducted a study that examined the long-term relationship between real GDP per person and per capita power usage in seventeen African nations. The study, spanning from 1971 to 2001, discovered a persistent correlation between the indicated factors throughout the nine countries included in the sample. A unidirectional causal association was found between real per capita GDP and per-capita electricity consumption in six of the nations in the sample. Conversely, the reverse relationship was detected in the other two countries.

Wietze & Kess (2005) conducted an additional analysis of the Turkish economy. An analysis conducted between 1970 and 2003 investigated the correlation between energy usage and economic growth. The investigation unveiled a unidirectional positive causal relationship, wherein GDP influences energy usage. Altınay & Karagöl (2005) did a study throughout the years 1950-2000 that yielded similar findings.

The results of another study by Haipeng, Peng & Ping (2005) that specifically focused on the Chinese economy from 1953 to 2003 were the same. The data indicate a significant correlation between real GDP and power use. The relationship is unidirectional and favorable, with electricity consumption exerting a positive impact on real GDP. There is a long-term causal association between economic growth and power consumption, according to a separate study by Squalli & Wilson (2006) that focused on the Gulf Arab countries.

Aydın (2010) conducted a separate study to investigate the correlation between energy use and economic growth. Two distinct analyses were conducted, spanning the periods 1996-2004 and 1980-2004, to investigate the influence of resources that generate primary energy consumption on growth. The research has demonstrated a direct correlation between energy usage and economic growth. The predicted economic growth resulting from a 1% increase in energy usage is 1.03%.

3. The Concept of an Energy Gap in Relation to Economic Performance

Amidst the energy problems that emerged in the 1970s, it became apparent that energy sources previously regarded as inexpensive and inexhaustible were not as reliable as initially believed. The perception of unattainability has resulted in heightened alertness, even in times of crisis. The ongoing trajectory of expansion in the global economy is deemed to be unsustainable. An inequitable distribution of energy resources and the diminishing availability of current reserves in response to growing demand are significant obstacles to achieving sustainable growth. According to Bayraktutan, Arslan, Özkan & Çevik (2012), having access to high-quality energy in a timely and sufficient amount at a reasonable cost is crucial for the operation and long-term viability of the economy.

The energy deficit resulting from supply-and-demand imbalances poses a significant challenge for nations that must be effectively tackled. To enhance the economic growth of the country, it is crucial to thoroughly separate the connection between the cause of the imbalance and supply or demand. While numerous causes contribute to each country's energy deficit, they can be broadly categorized into two primary groups. The initial factor is the demand-driven energy deficit. The factors encompass energy prices, urbanization, efficiency, economic growth, demographic impacts, and technological progress. Furthermore, it is feasible to discuss the energy deficit that arises from supply limitations. Energy pricing, energy supply security, economic and political structural issues, and geographical structure and climate all play a role in determining the energy gap. Nevertheless, it is important to acknowledge that these components are not completely autonomous from one another or previous period values.

The country's growth performance is notably characterized by its energy consumption figures. As a result, the need for energy has a significant impact on the analysis of growth. The projected 3.5% increase in global economic growth by 2022 (IMF, 2023) demonstrates the undeniable presence of a growing energy demand. Simultaneously, the energy resources available to countries at the national level are insufficient to fulfill their fundamental requirements. Conversely, the unequal distribution of energy resources necessitates the need to fulfill demand through imports. Imported energy supplies can support the growth of

countries that have contributed to the global harvest's expansion. The current state of foreign dependence not only imposes economic burdens but also entails political commitments. The degree of interdependence between entities can determine the likelihood of national security vulnerabilities arising (Bilginoğlu & Dumrul, 2012).

Conversely, the fluctuation in energy prices is a significant factor contributing to the energy gap. Energy price fluctuations will inevitably have an impact on nations, particularly those that rely heavily on imported energy. The principles of supply and demand, which govern the field of economics, do not seem to be relevant when it comes to fluctuations in energy costs. Although the continuous increase in prices does not lead to a decrease in energy demand, the decrease in prices does not result in an increase in energy demand due to inadequate storage facilities. As energy prices continue to increase, a lack of corresponding reductions in energy consumption leads to a limited ability to adjust the demand for energy based on price. Put simply, it is recognized that the demand for energy is not highly responsive to fluctuations in price (Bernstein & Griffin, 2005). The exacerbation of economic disparity is an unavoidable issue, particularly during periods of inflation. Increased utilization or intensity of energy resources in the domains of production or consumption within an economy reduces their vulnerability to escalating energy costs. The scenario is not likely to be sustainable. Initially, increasing energy prices are elevating the expenses of primary manufacturing elements and the costs of essential consumer products. Consequently, both production costs and, more specifically, individual consumption expenses are experiencing a minimal increase. In the end, increasing energy costs result in a decrease in actual national revenue. Consequently, there will be a fall in production levels, leading to a corresponding reduction in the amount of energy used. Energy costs significantly influence the correlation between economic growth and energy efficiency, serving as a crucial factor in determining supply and demand.

Inadequate implementation of national energy policies can contribute significantly to the occurrence of energy shortages. The significance of consistently implementing optimal plans becomes apparent when considering the utilization of diverse energy sources, including oil, natural gas, and coal, for power generation, which is crucial for the industrial sector. The present political power will determine the choice of electricity source for the exemplified electricity generation at this juncture. The key differentiation lies in whether the electricity generation will be derived from native sources of economic revival that are expensive and sustainable in the long run or from imported energy sources that have a limited supply duration and do not necessitate significant investment expenses. The answer to this query is closely related to the macro-policy that the current political authority has implemented. If the political authority prioritizes the expiration of their term over the country's interests, the economic recovery will focus on investments that yield short-term results, neglecting long-term investments and relying heavily on easy imports. Consequently, the proliferation of electricity generation in developing nations, facilitated by the utilization of energy supplies like natural gas or oil under international agreements, intensifies endeavors to get surplus energy. However, this serves as a justification for significant financial crises since it amplifies the susceptibility of the affected countries (Bilginoğlu, 2012). Implementing such a policy will unavoidably render the country incapable of pursuing an autonomous energy policy. Consequently, the viability of the production process will pose a risk. Hence, it is crucial for a

nation to enhance and optimize its current energy assets, if any. Although the current opportunities are scarce or inadequate, it is crucial to broaden the range of available energy sources or initiate the implementation of an alternate system. The implementation of economic and political strategies within this framework will directly affect the country's energy supply gap.

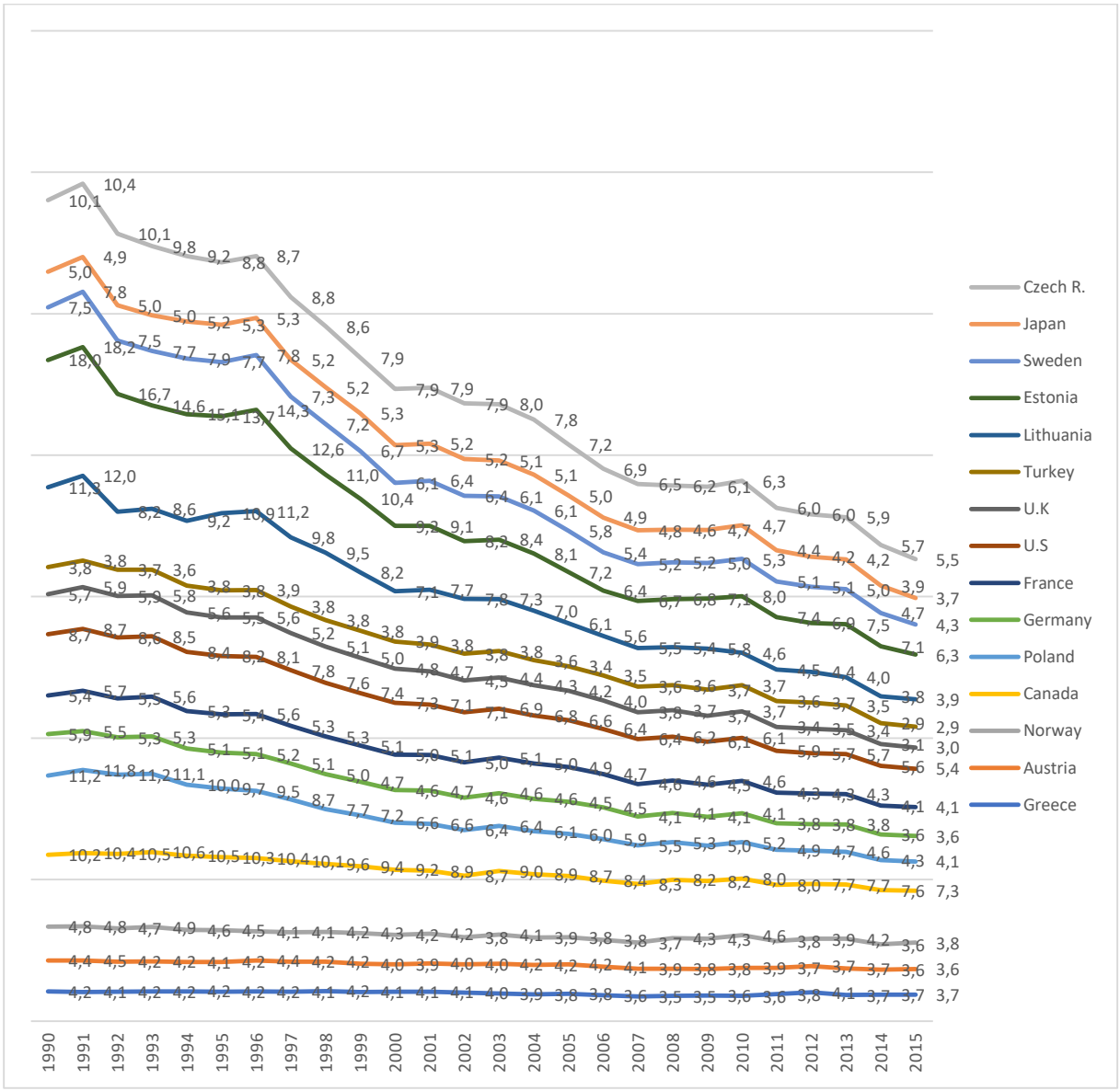
4. Energy Efficiency as a Component of a System

The development of production processes and quantitative increases are crucial for meeting the energy demand of countries facing challenges in transporting energy sources and high external dependency. This is necessary to ensure a sufficient, safe, and cost-effective energy supply. The matter of energy efficiency is more significant in this context. Optimizing the utilization of current imported or indigenous resources in a challenging, restricted, expensive, or unstable supply environment has the ability to significantly mitigate the impacts of these issues. Efficiently utilizing energy will inevitably result in obtaining the same input and a greater output. Therefore, by reducing energy costs, the considerable financial burden on national budgets can be alleviated and may even play a substantial role in addressing the energy deficit. In essence, the scarcity and subsequent high cost of energy can directly influence the degree of production. Consequently, poverty may arise in developing nations when the well-being of industrialized nations is jeopardized under unfavorable conditions.

At this juncture of the study, it is imperative to focus on the distinct notions of energy conservation and energy efficiency. Energy savings are derived from efforts to decrease energy consumption during the final stage of use in a broad sense. Energy efficiency encompasses the effective and optimal utilization of the entire energy production and consumption process, including energy-dependent product manufacturing. Energy efficiency includes savings techniques, which is why it is considered a more comprehensive notion. Enhanced energy efficiency implies that cost reductions are impactful at every stage of the process (Çengel, 2008).

The energy density level can be monitored to assess the achievement of energy efficiency in a country's economy or to quantify the amount of energy consumed per unit of harvest produced. The country's low energy density level indicates a high level of energy efficiency in production. Put simply, the amount of energy required to generate a single unit of harvest is comparatively smaller (Kavak, 2005). Through the surveillance of economies utilizing energy resources and emphasizing efficiency, it is possible to diminish the quantity of energy consumed, enabling the production of goods or services to persist at the same level of capacity without compromising quality or performance. This implies that the energy gap will diminish when the current energy demand lowers or as more energy is generated with the same energy input.

Graph: Energy Efficiency Values



Source: Composed by the author from data from the World Bank.

The above graph illustrates the energy efficiency values of certain OECD countries. The graph, utilizing data from the World Bank, illustrates the energy density levels of key energy sources. The ratio of energy supply to the sole domestic harvest determines the purchasing power parity. Energy density is a measure of the amount of energy required to generate a given level of economic output. A lower ratio implies a reduced utilization of energy in generating a single unit of output.

An examination of the data released by the OECD from 1990 to 2015 holds significance in the surveillance of macroeconomic performance via production activities. The adoption of high-efficiency measures to tolerate reduced energy costs is evidently linked to enhancements in the national revenues of the respective countries and contributes to the mitigation of energy-related external gaps. The absence of public data thus far is regarded as a drawback; however,

it is crucial to comprehend its significance and showcase that energy efficiency may be enhanced through the implementation of requisite measures.

According to the graph, Estonia had the highest percentage, reaching 18% in 1990. The 2008 global crisis resulted in a drop in efficiency. However, as the impact of the crisis lessened over time, there was a delay of many years before the upward trend resumed, and efficiency increased by 65% in 2015. Lithuania has the highest rate of efficiency increase, with a significant difference of 65.48%.

The value of Turkey stood at 2.9% in 2015. Based on statistics from 1990, the efficiency improvement in Turkey is predicted to be 24%. In Turkey, the production of a unit of national crop requires an initial energy consumption of 2.9 units. Turkey's energy efficiency value is above the average value of OECD countries, giving it a more favorable position. Over time, the amount of energy per unit volume is dropping while the amount of useful energy output per unit of input is increasing.

Enhancing energy efficiency is a crucial component, as is evident. The inability of certain countries to accomplish this feat results in their underperformance in international comparisons. Enhancing this efficiency is a complex and time-consuming endeavor that spans several years. Technological advancement and the availability of a skilled workforce are key elements driving this progress. By possessing the essential infrastructure, advanced technology, and skilled workforce, it is feasible to achieve a certain level of efficiency enhancement, even in the absence of natural resources. This implies that a greater or equivalent level of production can be attained while utilizing the same or reduced quantity of energy input. In nations with high levels of external dependence, this factor will significantly contribute to the reduction or elimination of the external gap resulting from energy imports. This will enable the more effective and optimal utilization of national resources. Regarding development, which holds greater significance than expansion, enhancements are expected to occur in the following manner: it is crucial to decrease or minimize reliance on energy in order to alleviate the pressure caused by foreign countries owing to external dependence. Energy efficiency is essential for making national decisions without being vulnerable to external concerns.

5. Conclusion

With the progression of population growth and improvements in social standards, there has been a corresponding rise in the need for energy across several sectors, including industry, commerce, transportation, and individual consumption. Various alternative techniques of energy production are being developed to fulfill this growing demand. The most notable among them are techniques for generating energy from renewable and nuclear sources. An ignored matter of utmost significance is the proper utilization of energy. Efficiency, regarded as the paramount internal asset, is the most successful among the numerous strategies to fulfill the given requirement.

When formulating energy strategies, it is also possible to consider diversifying resources as an alternate option. Several nations have already made considerable financial commitments to

renewable energy sources, and large incentives and assistance are also being offered in this field. Currently, numerous nations acquire energy from sustainable sources. Hence, it is not only feasible to avert the swift exhaustion of the finite reserves of fossil fuels but also to mitigate the escalation of external reliance.

Currently, prioritizing energy efficiency and conserving energy by utilizing existing resources effectively will enhance the sustainability of energy provision. Recently, there has been a renewed recognition of the significance of energy efficiency and energy-saving measures, as they are now seen as crucial for ensuring both the sustainability and security of the energy supply. As previously said, energy efficiency can be seen as a self-contained energy source. Energy efficiency measures have several benefits, including reducing reliance on external sources, generating employment opportunities, mitigating environmental impacts, supporting the long-term energy plans of countries, and yielding substantial cost savings.

Energy efficiency is a crucial mechanism for promoting sustainable growth and development. Empirical research has shown that advancements in energy efficiency have a direct impact on increasing productivity, decreasing unemployment rates, and making a beneficial contribution to economic growth. When examined within the framework of the sustainability phenomenon, this research highlights crucial features. However, despite the numerous prospects and favorable outcomes in the field of energy efficiency, it is important to highlight the insufficient global investment in technological infrastructure in this domain. When the matter of energy efficiency is resolved, decision-makers must exercise greater caution and rigorously adhere to the literature.

Upon analyzing global patterns, it is evident that both in Turkey and worldwide, there is a decline in energy density and a rise in energy efficiency. Although Turkey's progress in energy density surpasses the average of the OECD, the country's energy efficiency improvements or declines fall short of expectations. Hence, it is imperative to optimize the utilization of investment and incentives in energy efficiency, particularly in Turkey. Therefore, it is certain that the current potential will be fully utilized and that there will be a significant boost in energy efficiency in the country.

The primary goals of energy efficiency research include mitigating the risk of depleting non-renewable resources and alleviating the economic strain of energy dependence for countries like Turkey, which heavily rely on energy imports, while also addressing their energy deficit. Numerous global initiatives are currently underway to enhance energy efficiency, both at an individual and societal level. Efforts have been made using visual and written means to enhance energy efficiency in the domains of power, industry, transportation, and buildings. It is crucial to foster both personal and collective consciousness regarding this matter. Turkey possesses significant potential for energy efficiency, and implementing appropriate measures in this area will contribute to a reduction in energy imports.

Undoubtedly, the attainment of robust and enduring economic expansion will be realized, particularly through the implementation of value-added manufacturing. Energy is the primary and crucial basic ingredient for production. Due to the uneven distribution and limited supply of energy resources worldwide, several countries are gaining an edge based on their favorable geographical location. The widespread utilization of non-renewable energy sources globally is

altering the notion that these resources are infinite. Nations have developed a reliance on other nations due to the overutilization of fossil fuel resources. States face a drawback in the form of energy reliance. Energy self-sufficiency serves as a safeguard against political penalties at the global stage, as it is crucial for nations to secure their economic advancement. Nations such as Turkey can alleviate their external obligations by attaining energy self-sufficiency through enhanced energy efficiency, thereby reinforcing their sovereignty.

It is crucial not to disregard the importance of supply and demand stability in shaping Turkey's energy policies, as it will play a significant role in fostering economic growth and prosperity. Another concern pertains to the security of energy supply and the potential for enhanced production by utilizing domestic resources. Therefore, it is imperative for the country's energy policy to give utmost importance to the effective and efficient utilization of energy resources, capitalize on its advantageous geostrategic position, and minimize reliance on foreign sources of energy.

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Ethical Approval: The author declares that ethical rules are followed in all preparation processes of this study. In the case of a contrary situation, Fiscaoeconomia has no responsibility, and all responsibility belongs to the study's author.

Etik Beyanı: Bu çalışmanın tüm hazırlanma süreçlerinde etik kurallara uyulduğunu yazar beyan eder. Aksi bir durumun tespiti halinde Fiscaoeconomia Dergisinin hiçbir sorumluluğu olmayıp, tüm sorumluluk çalışmanın yazarına aittir.