

Research Article

## Energy Geopolitics and Policies: The Case of Türkiye

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### ARTICLE INFO

Received: Apr., 20. 2025

Revised: May., 30. 2025

Accepted: Jun., 30. 2025

#### Keywords:

Energy Geopolitics

Energy Policies

Energy Security

Global Energy Policies

Türkiye's Energy Policies

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ISSN: 2536-5010 / e-ISSN: 2536-5134

DOI: <https://doi.org/10.36222/ejt.1680126>

### ABSTRACT

This article aims to analyze energy geopolitics and policies in a historical, global, and national context through the case of Türkiye and to highlight the impact of energy on economic growth, security, and foreign policy. In this context, how access to energy resources shapes geopolitical balances is specifically analyzed. The relationship between energy resources and political power from the Industrial Revolution to the present day is analyzed, with a particular focus on the strategic role of oil and natural gas. In addition, concepts such as energy security, resource diversity, and geographical distribution are analyzed within the framework of international relations. The actors of global energy policies, the factors affecting the decision-making processes of these actors, and the systematic effects of energy crises are presented with examples. In the context of Türkiye, some of the advantages of the country's geographical location are analyzed within the framework of its role in energy transit routes and its dependence on imports. In addition, Türkiye's strategic and policy objectives, such as increasing domestic production, ensuring resource diversification, and shifting towards renewable energy, are included. This study offers a unique assessment of Türkiye's energy policy, examining it not only in terms of its geographical location but also at the intersection of energy transition, sustainability, and foreign policy. Through a thematic analysis method based on policy documents, a holistic relationship between energy investments, diplomatic initiatives, and security strategies has been revealed. The findings obtained in this context demonstrate that Türkiye's energy projects carry not only technical but also geopolitical implications.

### 1. INTRODUCTION

Energy plays a critical role in shaping modern societies as a key driver of economic growth and technological development. In particular, access to fossil resources such as oil and natural gas is of strategic importance for energy-dependent countries. In this context, energy has become not only an economic but also a geopolitical issue, triggering political and economic competition over energy resources. In this context, energy geopolitics, as a sub-branch of the discipline of energy geography, has emerged as a field that examines the balance of power and interest relations arising from the geographical distribution of energy resources and states' access to these resources [1].

With the rise of renewable energy sources and the decline in dependence on traditional sources, the global energy structure is undergoing a transformation. However, this transition also brings conflict risks due to energy supply security and geographical inequalities [2]. Most recently, the Russia-Ukraine War has destabilized energy supply, fluctuated energy prices, and caused countries to reshape their energy policies [3]. The crisis caused disruptions in the import and export of oil and natural gas and weakened the security of the energy supply. Consequently, this situation has led to

difficulties in meeting global energy demand, increased energy prices, increased costs, and hampered economic growth [4].

These developments have also disrupted the process of achieving the goals of the Paris Climate Agreement; carbon emissions have continued to increase outside the pandemic period [5]. In this context, energy policies are now being managed through political and strategic processes that include not only environmental but also geopolitical and economic dynamics. At this point, Türkiye is considered a key actor in energy transit due to its geostrategic position and shapes its policies, such as energy security and resource diversity, accordingly.

The transformation process of energy systems is also shaped by international agreements and climate commitments in the context of both supply security and economic development. In this context, the United Nations Sustainable Development Goals (particularly SDG 7 and 13), the Paris Agreement, and the Net Zero targets announced after COP26 have become decisive in determining the direction, pace, and technological preferences of energy investments. In this context, scenarios developed by the IEA, IRENA, and the European Commission propose transformations on the energy supply and demand sides with the aim of limiting global temperature increase to 1.5°C by 2050, emphasizing the need

to integrate energy efficiency, electrification, carbon removal technologies, and green financing tools [6]. In this context, it is evident that energy policies are beginning to take shape within a framework that transcends national borders, and that Türkiye must critically consider this multi-layered context in its energy transition process.

With the adoption of the Paris Agreement at COP21, the relationship between energy policies and climate diplomacy has become more visible [7]. In this context, countries are committing to both emission reductions and energy production transformation through their Nationally Determined Contributions (NDCs), which they update every five years. At the COP26, 27, and 28 summits, the goal of limiting global temperature increase to 1.5°C was clearly stated scientifically, but data as of 2023 showing that this limit has been exceeded demonstrates how fragile these goals are [8]. The scenarios developed to overcome this fragility divide the energy transition into different strategic paths; some focus on electrification and efficiency, while others propose solutions based on carbon removal technologies. This diversity highlights that energy policies encompass technical, normative, and geopolitical dimensions.

This study aims to contribute to the literature by examining Türkiye's energy policies not only in terms of transit routes and access to resources but also in a comprehensive manner within the context of the energy transition process, sustainability goals, and foreign policy. In this regard, the overlapping objectives between Türkiye's energy projects and foreign policy strategies have been analyzed using thematic content analysis, and the interaction between energy security, environmental sustainability, and regional diplomacy has been evaluated in a multidimensional manner.

In this study, the historical process of energy geopolitics, energy policies, Türkiye's place in this field, and the policies it pursues will be discussed in general terms. The historical development of energy geopolitics will be examined comprehensively, starting from the Industrial Revolution, through the Cold War period, to the present day, especially in the 21st century, when renewable energy resources have come to the fore. Energy geopolitics will be evaluated within the framework of basic topics such as energy security, resource diversity, and geographical distribution of energy resources. In the case of Türkiye, energy geopolitics and policies will be discussed in detail; the country's geopolitical position, its role in energy corridors, its existing and potential energy resources, and its relations and cooperation in the field of energy will be analyzed. In addition, this study will provide a broad view from the Turkish perspective and include policy evaluations in the context of ensuring energy security, increasing renewable energy investments, and regional and international cooperation.

## 2. HISTORICAL DEVELOPMENT OF ENERGY GEOPOLITICS

The indirect relationship between energy and national power has been an important element of state policies since the Industrial Revolution. The success of England and Germany in the industrialization process, thanks to their coal resources, constitutes one of the important examples of the link between energy resources and economic and military power [9, 10]. By the 20th century, oil had replaced coal and assumed a key role in energy production thanks to its advantages, such as high

energy density and easy portability [11]. During this period, the United States considered access to overseas oil resources as one of its main geopolitical priorities [12].

After the Second World War, the US increased its regional influence through energy by making oil deals with countries such as Saudi Arabia and Iran. The US also strengthened its military presence in the region to ensure the security of oil resources [13]. In fact, it can be said that the post-World War II period was characterized by relatively abundant and cheap oil. This stimulated global economic growth and enabled the development of new industries and markets. Highway construction, suburban housing, and air travel are some of the important trends that helped increase oil consumption during this period. In addition, the petrochemical industry - plastics, synthetic fibers, and other petroleum-based products - expanded greatly during this period. Continued oil discoveries and relatively low extraction costs made it possible for oil to be widely used and for new industries and markets to emerge [14].

However, the OAPEC (now OPEC) embargo in response to the Yom Kippur War in 1973 triggered the global oil crisis and brought energy security to the forefront of the agenda in Western countries [15]. In terms of major industrial powers such as the US, Japan, and Western Europe, the fact that these countries meet a significant portion of their energy needs from the Persian Gulf has increased their dependence on the region. The US, in particular, has adopted establishing close relations with the oil-rich states in the Middle East as a strategic priority to sustain its economic growth and ensure energy supply security [16]. In this context, strategic gateways such as the Strait of Hormuz began to play a critical role in global energy security [17].

During the Cold War, access to oil resources became one of the determining factors in the balance of power that ideological blocs tried to establish. The importance of the oil reserves of the Middle East and the Gulf countries increased even more during this period. The decline in domestic production in the US and nationalist movements in the Middle East led to supply disruptions and price hikes [18].

The crises of the 1970s reshaped US energy strategies; energy policies against the Soviet Union became a priority. Even if the oil crises were not directly caused by the conflict between the US and the Soviet Union, they had a significant impact on the Cold War. The US withdrawal from Vietnam, the Watergate crisis, the wave of revolutions in the Third World, the Soviet Union's nuclear parity with the US, and the decline in US oil production due to increased competition from Western Europe and Japan coincided with the period of oil crises [18].

The post-1990s period, after the end of the Cold War, established a clearer and more visible link between access to energy resources and security, and energy became one of the main elements of the new security paradigm [11]. In this process, the possession of energy resources began to be perceived as a direct reflection of economic and military power. Indeed, when we look at the energy geopolitics of the 20th century, it can be seen that the struggles over the control and distribution of oil resources were the main factors determining the strategic and economic dynamics of this period. In the post-Cold War era, Russia consolidated its geopolitical power by controlling energy resources in Central Asia and the Caucasus, while China's Belt and Road Initiative reshaped the economic and energy balances in the region [19, 20]. This competition has increased the geopolitical value of

energy transmission lines and made energy diplomacy a key strategic tool in foreign policy [21].

By the 21st century, the importance of renewable energy sources had increased, and energy policies had begun to take shape in line with goals of environmental sustainability and carbon neutrality. Geopolitical crises such as the Ukraine War brought the question of the reliability of fossil fuels to the agenda and accelerated the shift towards technologies such as zero emission [22, 23]. On the other hand, OPEC's influence on the market continues to shape global energy balances with volatility in energy prices and supply-demand imbalances [24].

### 3. GLOBAL ENERGY GEOPOLITICS

The concept of geopolitics was first used by Rudolf Kjellén in 1905 and is characterized as an approach to explain the position of nation-states in the international balance of power through geographical, historical, and social factors [25]. Kjellén's views were later developed by theorists such as Ratzel, Mackinder, and Mahan, creating new areas of analysis through the political effects of energy resources [26]. In this context, geopolitics evaluates the effects of geography on both domestic and foreign policy through elements such as borders, resources, and population [25, 27].

The increasing competition over energy resources during the Cold War and decolonization periods reinforced the importance of energy geopolitics [28]. The crises in the Middle East brought energy-based political strategies to the forefront; factors such as geographical location, administrative structure, and natural resources have been decisive in energy geopolitics [29]. The oil-rich Persian Gulf and Caspian Basin have become one of the main lines of regional instability and military tensions [27].

Today, the ownership of energy resources is considered a major indicator of geopolitical power. While the US, Saudi Arabia, and Russia are the largest producers, the US, China, and India are among the largest consumers [30, 31]. This situation creates the need for two opposite concepts, such as “competition” and “cooperation” over energy resources at the same time. In this context, the impact of energy geopolitics on the balance of power in the international system becomes inevitable. However, since the positioning of the great powers in the global system varies according to the geographical distribution of energy resources, it can sometimes encourage cooperation and sometimes bring about polarization and conflict. In this process, states are observed to act according to their geostrategic goals.

The fact that control over energy resources and transportation routes plays such an important role in global power struggles is embodied in the intense interest in the Middle East. Similarly, geopolitical and geostrategic struggles over the Caspian Basin and Central Asia constitute one of the main lines of energy competition in the 21st century [14].

While the weakening of US hegemony has led to fundamental changes in the international oil system, the decline in America's production capacity has also limited its “capacity to provide energy to allies” that it maintained throughout the post-Cold War period [32]. Keohane sees this development as “a widening of the space for international cooperation” and characterizes crises as incentives for cooperation. Indeed, the economic summits of 1975 were born in response to events such as the oil crisis and the collapse of Bretton Woods, and ultimately aimed to increase coordination among major economies [32]. Similarly, the transition from coal to synthetic

oil from the oil crises of the 1970s to the current “golden age of gas” has been shaped by cooperation between states and energy companies [33]. In this context, the \$100 billion oil deal between Russia and China in 2009 and the \$400 billion natural gas deal in 2014 deepened the strategic partnership in the energy field. The ultimate outcome of this cooperation was to increase China's energy security while providing economic and political advantages to Russia [34].

In conclusion, from a realist perspective, it can be said that the struggle for access to energy resources and energy security is often accompanied by competition and power struggle. In particular, the fact that most of the hydrocarbon reserves are concentrated in regions such as the Middle East, Russia, and Venezuela increases the competition for access to resources among energy-importing countries (See Table I). Developing countries such as Brazil, Indonesia, Malaysia, South Korea, and Türkiye are also participating in this competition, both to meet their energy needs and to have a greater say on a global scale [14].

TABLE I  
TOP 10 COUNTRIES WITH THE LARGEST OIL RESERVES IN 2024

Rank	Country	Oil Reserves (billion barrels)	Share of Global Reserves
1	Venezuela	303.8	%17.6
2	Saudi Arabia	297.5	%17.3
3	Canada	168.1	%9.8
4	Iran	157.8	%9.2
5	Iraq	145.0	%8.4
6	Russia	107.8	%6.3
7	Kuwait	101.5	%5.9
8	United Arab Emirates	97.8	%5.7
9	United States	68.8	%4.0
10	Libya	48.4	%2.8

However, some views question the classical understanding of energy geopolitics. According to them, traditional factors such as energy resources have become less influential, while relatively new factors such as technology, ideology, and economics have become more decisive [35]. Indeed, several paradigmatic shifts such as nuclear deterrence, the end of colonialism, and environmental concerns, support this view. However, fossil fuels continue to meet the bulk of energy demand. Although the share of renewable energy in electricity generation is increasing, it is still far from meeting the total energy supply. After all, even in the most affluent countries of the world, the proportion of electricity provided by wind and solar energy combined in their electricity sectors has not reached more than one-third of the total [23].

In addition, the other side of energy geopolitics puts pressure on fossil fuel industries with demands for environmental sustainability. In this context, governments and NGOs are focused on developing solutions to reduce carbon emissions [2]. Technologies such as LNG, shale gas, and integrated refineries increase energy efficiency, while strategies supported by technologies such as artificial intelligence, blockchain, and the Internet of Things provide a significant competitive advantage in the sector [22, 36].

#### 3.1. Diversity of Energy Resources

Diversifying energy sources is of strategic importance for energy supply security, cost reduction, and mitigation of geopolitical risks. This diversification includes renewable energy (solar, wind, hydro), nuclear, and fossil fuels (oil,



regions where energy reserves are concentrated face political and social instability. Civil wars in the Middle East, infrastructure deficiencies in Africa, and harsh natural conditions in Central Asia directly and indirectly affect energy production and transportation [33]. Such geographical and political barriers create uncertainty in energy supply and complicate energy-based foreign policies.

### 3.3. Global Energy Policies

Today's global energy policies are driven by a number of actors with different interests and priorities. Their decisions are decisive on key issues such as energy security, resource management, prices, infrastructure investments and combating climate change [12]. As such, energy policies can often become a negotiation process characterized by bargaining, interdependence and conflicts of interest.

The advantage of holding energy resources can elevate states to an important position in energy policies. Especially the oil and natural gas-rich countries in the Middle East owe their strong position in the energy markets to these resources. According to BP data, 93.5% of the world's proven oil reserves are under the control of only 14 countries [50]. However, political instability in these countries brings with it more complex factors that shape their energy policies. International relations theories often consider this situation within the framework of multifactorial cause-and-effect relationships and argue that political stability is as decisive as the availability of energy resources [51].

Energy geopolitics lies in the so-called “gray area” between power politics and markets. This space is highly sensitive to conjunctural shifts. For instance, Russia, which was a reliable energy partner for Europe before the Ukraine Crisis, started to use energy as a tool of pressure after the crisis. This has contributed to the positioning of energy not only as a market but also as a power. Russia used the power of its energy to influence the European economy and politics. This development has created the necessity to embrace energy as an instrument of economic and geopolitical power. In the face of this situation, European countries have resorted to diversifying their imports by developing alternative policies to reduce their energy dependence on Russia [52].

In this context, energy security has become a multidimensional phenomenon. Factors such as resource diversity, reducing external dependence, strengthening infrastructure, and environmental sustainability are among the main components of energy security. In recent years, the main drivers of the energy transition that countries have been trying to realize, such as reducing the use of fossil fuels and achieving net-zero carbon targets, have also become priorities in energy policies. This transformation in energy policies can be said to be related to the concept of the “energy trilemma”, which combines three factors: security, accessibility, and sustainability [53].

Energy transition is a structural and long-term transformation process that refers to the shift from fossil fuel-based systems to low-carbon, sustainable, and digitized energy infrastructures. This transformation is not merely a technical change; it also involves economic, administrative, and social restructuring. While only a limited number of countries had set renewable energy targets at the beginning of the 2000s, these targets have nearly reached a universal level in the post-2020 period, with global public support for clean energy investments

exceeding USD 2 trillion. However, the majority of these resources are concentrated in developed economies such as China, the EU, and the US, while developing countries still face structural and financial barriers [54, 55].

Despite some progress, it can be said that this transition process faces many structural challenges. In particular, factors such as infrastructure dependence on fossil fuels, the high costs of renewable technologies, and insufficient energy storage capacity are slowing down and hindering this process. On the other hand, the fact that the transformation of the energy system requires changes at the technical, political, economic, and social levels further complicates this process [16].

The International Energy Agency (IEA) predicts that the world's population will increase by around 2 billion by 2040, leading to a 50% increase in electricity consumption as living standards rise. Currently, 66% of energy demand is met by fossil fuels, a proportion that is projected to remain largely unchanged until 2050. In the same period, a 28% increase in natural gas demand and a 17% increase in oil demand are expected [56].

As of 2021, daily oil production is around 93 million barrels, while consumption is over 100 million barrels. The pressure on the global energy market caused by increasing energy demand in large countries such as China is a harbinger that this ratio will increase day by day [3]. The Energy Information Administration (EIA) estimates that if current policies continue, global energy consumption will increase by 50% by 2050 [57].

Some experts argue that these risks can be mitigated by developing accessible energy sources, even if they are more expensive. Some, such as Daniel Yergin, argue that this approach will both increase political cooperation and encourage R&D for more sustainable energy solutions [33].

In this case, sustainability has become a key element not only of environmental policies but also of development strategies. At this point, it is essential that the energy transition of countries takes place without completely disconnecting from fossil fuels. Ultimately, while the demand for oil and natural gas will continue to persist in this process, the countries that control resources will also maintain their influence on global policies. Moreover, the rise of actors such as Russia, China, and India is redefining the position of actors such as the US and the European Union (EU) in the international system, while regional powers such as Türkiye continue to increase their geopolitical importance [12].

This global energy geopolitical framework provides a meaningful backdrop for assessing Türkiye's energy strategies and foreign policy preferences. Türkiye is one of the few countries where global dynamics directly influence local policy-making processes, due to both its geographical location and its dependence on energy imports. In the following section, we will analyze how global trends are reflected in Türkiye's energy security, energy supply diversity, and green transformation strategies. With this transition, we will explain how the transnational effects of the geopolitical energy conjuncture play a transformative role in Türkiye's domestic policy-making.

## 4. TÜRKİYE'S ENERGY POLICIES

Daniel Yergin traces the root causes behind the conflicts over the Middle East's oil reserves throughout the 20th century to the birth of the oil industry. According to Yergin, the complex

and complicated relations between the Ottoman Empire, Britain, and Germany outlined the framework of energy competition in the region. The “Treaty of Foreign Affairs” signed in 1914 on the initiative of one of the prominent figures in this context, the Armenian-born businessman Calouste Gulbenkian (known as “Mr. Five Percent” due to his 5% share in international oil deals), distributed important oil concessions among the Anglo-Persian Group, Deutsche Bank and Shell, limiting the influence of external actors in energy production in the Ottoman territories (except for Egypt, Kuwait and some areas on the Turkish-Iranian border). Yergin argues that this agreement shaped the development and control of the Middle East's energy resources and set the stage for conflicts that would last throughout the 20th century [2].

Although this agreement is considered one of the turning points in the regional energy struggle, it should not be forgotten that the new political structures that emerged after the First World War and the dissolution of the Ottoman Empire also affected this process. In this process, the reshaping of the Middle East and the sharing of energy resources became one of the most important issues in international politics. Today, dynamics such as the shift towards renewable energy, the discovery of new reserves, and the changing balance of power continue to influence the course of energy policies in the region. Nevertheless, it can be said that oil continues to be the main determinant of strategic struggles in the Middle East.

Although Türkiye is not directly related to the energy wealth of the Middle East in historical and geographical terms, it has a critical position in regional energy equations. Although Türkiye does not have rich hydrocarbon reserves within its borders, its geographical location has made it an important energy transit country. The fact that the logistical transit routes of oil and natural gas transported from the Middle East to Europe and other markets pass through Türkiye increases the country's geostrategic importance. Türkiye's energy policies are built on ensuring the security of these transit routes and directing energy diplomacy.

At the turn of the 20th and 21st centuries, Türkiye started to shape its energy geopolitics more actively in line with the transformations taking place at the international level. With the end of the Cold War, the replacement of military-oriented policies with economic-based strategies in the global system has led to some transformations in the energy policies of states. In particular, the rise in importance of neoliberal economic policies has brought along the process of evaluating strategic areas such as energy outside the security axis. In this context, states have started to evaluate energy not only within the framework of security, but also on the axis of economic development. Within the framework of these developments, developing countries such as Türkiye have also sought to utilize their existing natural and geographical resources more effectively for development purposes by keeping pace with the conjunctural change [29].

As a country that is aware of this economic and geopolitical transformation, Türkiye aims to play an active role in regional and international energy agreements and thus both maintain and strengthen its geopolitical position (See Table II). Türkiye's energy strategies are shaped in parallel with organizations such as the IEA and the International Atomic Energy Agency (IAEA), prioritizing issues such as energy security, resource diversity, and sustainability [58].

In addition, Türkiye has pioneered important pipeline projects, aiming to become a central country in energy trade.

Projects such as the Baku-Tbilisi-Ceyhan (BTC) oil pipeline and the Trans-Anatolian Natural Gas Pipeline (TANAP) have strengthened Türkiye's role in energy transportation and have been a driving force in increasing the country's domestic energy supply security and influence in foreign markets. In this context, Türkiye transports oil from Azerbaijan and Northern Iraq to the Mediterranean Sea through the port of Ceyhan, and Russian and Azerbaijani oil to Europe through the Straits. As for natural gas, Türkiye imports most of its needs from Russia, Iran, and Azerbaijan [46] (See Figure 4).

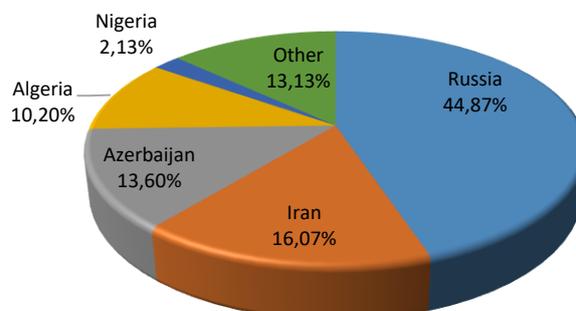


Figure 4. Türkiye's Natural Gas Imports by Source Countries in 2021 (%) [59].

Türkiye's natural gas outlook shows that Russia is the largest supplier of natural gas to Türkiye, followed by Iran and Azerbaijan. Although there are periodic variations in this distribution, the general trend is largely constant [60] (See Figure 5). Türkiye supplies about half of its natural gas consumption from Russia, one of the largest natural gas producers in the world energy market. At this point, it can be said that Russia is a vital supplier for Türkiye [3]. Although political relations between the two countries are strained from time to time, the interdependence established through the energy sector stabilizes this relationship. Economic integration, especially in the energy sector, is one of the main reasons why the two countries continue to cooperate despite their foreign policy differences. However, all these factors aside, it can be said that Türkiye's energy dependence on Russia forms the basis of the strategic energy partnership between the two countries [61].

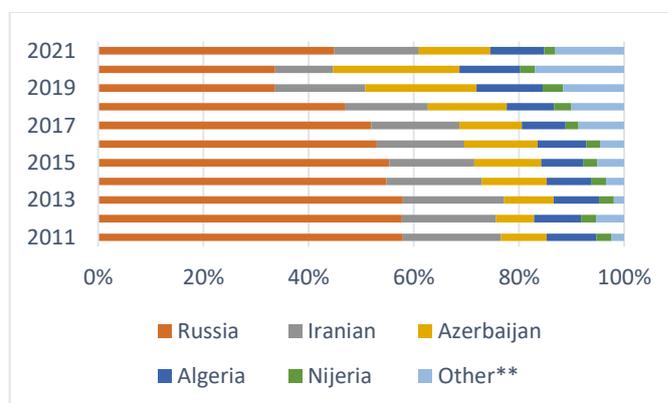


Figure 5. Changes in the Shares of Türkiye's Import Sources Between 2011-2021 [59].

Türkiye also aims to strengthen its energy relations with Europe and to integrate with Europe in the energy sector [58]. At this point, Türkiye needs to diversify its natural gas

resources and create alternative supply lines to Russia in the process of EU membership. In this framework, the Nabucco Project, which was planned in 2009, was considered a strategic initiative for the EU's energy security. Although this project was cancelled in 2013, the subsequent realization of TANAP within the scope of the Southern Gas Corridor is promising [46]. This project aims to reduce dependence on Russia by transporting gas resources from Central Asia and the Middle East to Europe.

In response to these developments, Russia brought the South Stream Project to the agenda to have a greater say in energy exports, but when this project failed, it launched the TurkStream Project, which aims to transport natural gas to Türkiye via the Black Sea. However, the crisis in Turkish-Russian relations following an airspace violation in 2015 disrupted cooperation in this area, but relations were normalized again in 2016, and the TurkStream process was continued [62].

Intending to diversify its natural gas sources and increase its influence in the energy market, Türkiye has been developing strategic cooperation with both major producing countries, such as Russia, and neighboring actors such as Iran. While ongoing energy relations with Iran create economic interdependence, the potential threats stemming from Iran's nuclear activities can be a concern for Türkiye. Despite this, Türkiye has preferred to develop its economic and energy relations with Iran and has adopted a cautious policy on sanctions. However, the trade balance with Iran is unfavorable to Türkiye, which weakens the economic dimension of this relationship. To overcome this imbalance based on energy imports, it is important to diversify export items [63].

Finally, Türkiye's energy partnership with Azerbaijan is of great importance not only for both countries but also for regional energy security. Thanks to the TANAP Project, Türkiye has concretized its ambition to become an energy hub rather than an energy terminal. While increasing Europe's gas supply security, this project has also further strengthened the energy relations between Türkiye and Azerbaijan [64].

Countries with energy resources are in an advantageous position in terms of economic and political power, while countries that are energy importers are more vulnerable [3]. Although Middle Eastern countries have the potential to be energy hubs, they have to undertake the challenging task of ensuring regional stability to maintain this role. Otherwise, it can be said that security vulnerabilities could become defenseless against foreign interference. Türkiye, too, needs to utilize its geopolitical advantage in line with its strategic interests by maintaining stability in its domestic and foreign policies. Although Türkiye today serves as a bridge between energy-rich regions such as the Middle East, the Caucasus, and the Caspian Sea basin and regions with high energy consumption such as Europe, external dependence is a serious risk factor for Türkiye.

Energy self-sufficiency refers to the capacity of a country to meet its energy demand with its resources. This ratio is calculated based on production over total primary energy supply (TPES), and any ratio below 100% indicates import dependency [65]. According to the International Energy Agency, Türkiye imports 93% of its oil and 99% of its natural gas (See Figure 6). This dependency is one of the main factors increasing the foreign trade deficit and debt [66]. As a matter of fact, it is known that the increase in demand and exchange

rate fluctuations after the COVID-19 pandemic have also negatively affected prices. In particular, the significant depreciation of the Turkish lira in 2022 increased imported energy costs, while wholesale natural gas prices reached record highs in 2023 [67]. This problem is exacerbated by the fact that households, industry, and power plants, which are the main users of natural gas, cannot be brought under control [68].

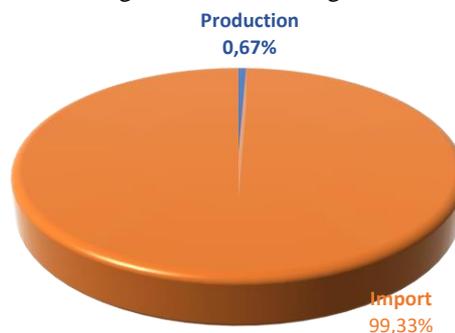


Figure 6. Shares of Sources of Total Natural Gas Supply in 2021 (%) [59].

According to data from the IEA, Türkiye's energy trade balance was consistently negative between 2000 and 2023 [69]. As can be seen from the graph above, during this period, the volume of imports (blue columns) remained well above exports (dark blue), and the energy trade deficit (orange line) continued to deepen (see Figure 7). It is observed that imports increased significantly until 2015, and although there has been a partial balance since then, Türkiye remains a net importer as of 2023. This situation makes it necessary to address Türkiye's energy policies not only through new investments but also in terms of structural external dependence. Supply security, economic vulnerabilities, and foreign policy risks are directly affected by the energy trade deficit and limit the pace of the energy transition process. Therefore, when evaluating the sustainability and impact of energy investments, the balance of trade and import structure must be considered.

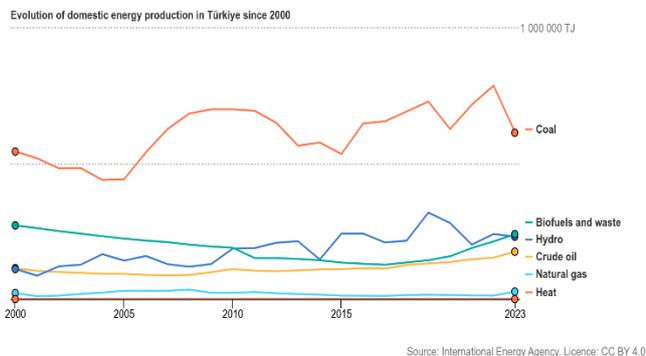


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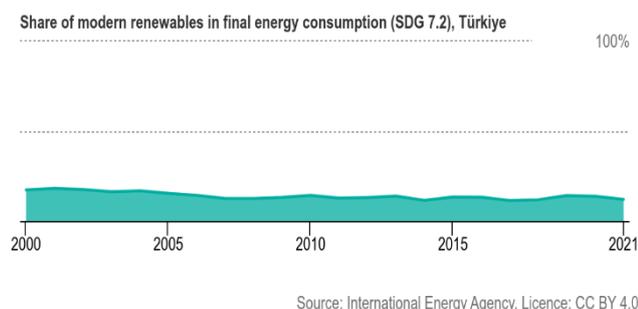
Figure 7. Türkiye's Energy Trade Balance (2000–2023) [69].

Despite significant investments in Türkiye's energy policies over the past 20 years, domestic production capacity remains limited in terms of meeting total energy demand. According to IEA data (see Figure 8, 9), the most notable increase in domestic energy production between 2000 and 2023 has been in coal-based production [69]. While this situation provides short-term relief in terms of energy supply security, it has led to serious debates regarding environmental sustainability. This is because production from other sources such as hydroelectric, natural gas, and biomass has been inconsistent, while production levels in innovative areas such as biofuels and

waste-based production have remained low. This production structure indicates the instability of renewable energy investments and the slow pace of transition away from fossil fuel infrastructure. Therefore, the impact of the investment-policy relationship on reducing energy import dependency should be evaluated not only based on the existence of investments but also in conjunction with structural transformations in production capacity.



**Figure 8.** Development of Domestic Energy Production in Türkiye (2000–2023) [69].



**Figure 9.** Share of Modern Renewable Energy in Final Energy Consumption in Türkiye (2000–2021) [69].

When evaluated in the context of energy supply security, it is clear that simply increasing supply is not enough. In addition, the source structure must be diversified, and environmental risks must be reduced. In 2020, 42.85% of global CO<sub>2</sub> emissions originated from electricity and heat production; this data highlights the need to consider energy investments in conjunction with climate and security policies. In this context, renewable energy investments have become elements that contribute not only to low-carbon targets but also directly to supply security. As of 2021, the global capacity of wind and solar energy has exceeded 1,700 GW, while microgrid systems have enabled the integration of these investments into the distributed production infrastructure [70]. In this context, it can be said that Türkiye continues to face supply security risks and a structure that supports external dependency.

Such structural problems are a call for Türkiye to accelerate its search for alternative energy policies. Increasing investments in renewable resources and nuclear energy will have a positive impact on energy dependence in the long run. Considering Türkiye's potential in wind, geothermal, and hydroelectric resources, it can be said that investments in these areas will further increase their strategic importance in terms of energy security and sustainable development [71].

In this transformation process, Türkiye is focusing its strategic priorities on three main areas in line with its Net Zero 2053 target: ensuring energy supply security, increasing energy independence, and managing the decarbonization process in line with the net-zero target. These three main objectives, clearly outlined in the Ministry of Energy and Natural Resources' 2024 Launch Report, are supported by multi-dimensional sub-priorities ranging from digitalization to hydrogen technologies, and from institutional restructuring to market reforms [72].

The process, which began with the adoption of the Renewable Energy Law in 2005, gained momentum in the post-2010 period with policy tools such as the YEKDEM application, YEKA tenders, and unlicensed production systems. Türkiye's renewable installed capacity was 33% in 2005, and this ratio has reached 59% as of 2024. Investments in wind and solar energy, which stood at 250 MW in 2013, have exceeded 31 GW in 2024; the overall target is to reach 120 GW of installed capacity by 2035. This growth demonstrates Türkiye's commitment to institutionalizing its energy transition, but it also highlights that the country is still in the “infrastructure alignment” and “grid transformation” phases. For example, an investment of \$28 billion is projected for transmission infrastructure, a key component of the green energy transition, by 2035, including plans for a 14,700 km HVDC network [72].

Türkiye's Green Deal Action Plan, published in 2021, strengthens the institutional foundation of energy transformation with 81 actions covering carbon border adjustment, sectoral roadmaps for green transformation, environmental labeling, circular economy, clean energy, and green finance. The plan envisages critical steps such as a green bond/sukuk guide, green OSB certification, emission reduction roadmaps, and a national carbon pricing mechanism [73]. These structural targets show that Türkiye is striving to rapidly increase its technical capacity in the energy transition; however, when compared to European countries, the transition process has not yet reached a “fully synchronized” point.

On the other hand, the success of the energy transition depends not only on technological developments but also on long-term financing and international policy alignment. In the post-2021 period, the European Green Deal, CBAM, REPowerEU, and the global climate agenda have created increasing pressure for transformation on Türkiye's foreign trade and investment structure. In this context, the World Bank CCDR and Türkiye's Updated National Contribution Statement (NDC) set a target of reducing greenhouse gas emissions by 41% by 2030, while also highlighting the need for at least an additional USD 165 billion in investments for green transformation between 2022 and 2040. However, while half of these investments are expected to be covered by the private sector, the current green finance capacity falls significantly short of this need [74].

Green financing in Türkiye still relies heavily on short-term loans; the share of institutional investors, such as long-term capital market instruments, insurance, and pension funds, is well below the OECD average. Green bond issuance is limited, and private sector capital investments are risky due to exchange rate fluctuations. This situation both increases the burden on the banking system and hinders companies' long-term green

transition investments [74]. Therefore, a national green taxonomy, transparency standards, and the strengthening of secondary capital markets are priority reform areas for ensuring the financial sustainability of Türkiye's energy and climate policies.

## 5. THE CENTER OF ENERGY: TÜRKİYE

Türkiye's energy policies are determined by factors such as increasing energy demand, dependence on imports, and geopolitical proximity to reserves. These strategies are shaped under basic headings such as ensuring diversity of sources and routes, aiming to become a hub in regional energy trade, promoting sustainable development, reducing environmental impacts, and shifting towards renewable and nuclear energy. In this context, Türkiye is pursuing comprehensive policies to reduce import dependency, expand the use of domestic and renewable resources, and diversify its energy portfolio. In terms of renewable energy capacity, Türkiye ranks 5th in Europe and 12th in the world [58]. Since most of the energy resources are located in the east and consumer countries in the west, Türkiye's position as a natural energy bridge between these two axes gives it a strategic advantage [29].

Türkiye's current oil reserves are approximately 1.2 billion tons. Of this, 239 million tons are suitable for production. So far, 170 million tons of production have been realized, and about 71 million tons of producible reserves remain [75]. As of 2021, onshore reserves are set at 412 million barrels of oil and 3.1 billion cubic meters of natural gas. In the same year, an average of 69 thousand barrels of crude oil was produced daily, while 631 thousand barrels of crude oil and 260 thousand barrels of processed products were imported [39, 76].

The Thrace region is home to Türkiye's largest domestic natural gas reserves. Tekirdağ stands out in this area, while the Southeastern Anatolia region (Adıyaman, Batman, Diyarbakır) stands out in oil production [77, 78]. However, current production is far from meeting Türkiye's total demand. This is because access to the deep geographical layers where the reserves are located requires advanced technology and high costs [75].

Oil production has gained momentum in recent years, especially with the discovery of 150 million barrels of reserves in Gabar Mountain. Starting with a daily production of 5 thousand barrels, the number of wells in this field is planned to be increased, and its annual economic contribution is expected to be 2.9 billion dollars. This discovery is expected to increase Türkiye's total oil reserves to 1.2 billion barrels [57, 79].

Lignite coal has a significant share among domestic resources. Although there has been a general increase in energy production since the 1990s, lignite and hard coal production have declined. Coal, hydroelectricity, and other renewable resources are important in Türkiye's energy production. These include wood, plant and animal waste, geothermal, and solar energy [80].

According to the International Energy Agency, 54% of Türkiye's electricity generation in 2021 was from renewable sources [81]. In 2022, coal accounted for 34.6%, natural gas 22.2%, hydroelectric 20.6%, wind 10.8%, solar 4.7%, geothermal 3.3%, and other sources 3.7% of electricity generation. By the beginning of 2023, the installed electricity generation capacity reached 104,038 MW [82].

TABLE II  
PRIMARY ENERGY: CONSUMPTION BY FUEL [5].

Fuel Type	2020	2021
Oil	1.84	1.89
Natural Gas	1.66	2.06
Coal	1.70	1.74
Nuclear Energy	–	–
Hydroelectric	0.74	0.52
Renewable	0.50	0.61
Total	6.44	6.83

In 2020, Türkiye's primary energy supply reached 147.2 million tons of oil equivalent. Of this supply, 24.6% was used in industry, 22.7% in the conversion sector, 18.3% in transportation, 17.5% in housing, and 7.8% in the service sector. In terms of sources, 28.7% of the supply came from oil, 27.7% from coal, and 27% from natural gas. In the period 2009-2019, primary energy supply increased, but the total share of oil and natural gas decreased to 55.7% in 2020 [39]. This distribution reveals the resource diversity of Türkiye's energy system and the balance between imports and domestic production.

Türkiye's National Energy Efficiency Action Plan (NEEAP), prepared to increase energy efficiency, covers the period 2017-2023 and includes 55 actions in six different areas [83]. In the 2017-2021 period, energy efficiency investments reached USD 6.4 billion, resulting in energy savings of 4,473 ktoe and economic benefits of USD 1.56 billion. It was observed that the targets of NEEAP for this period were realized with a 109% success rate [84].

## 6. CONCLUSION

In the simplest terms, energy constitutes one of the cornerstones of modern life and economic activities. Even the smallest price fluctuations in this cornerstone can have global effects. These fluctuations make energy security one of the important agenda items of international politics. In this context, countries are turning to strategies such as promoting domestic production, ensuring diversity in energy production, and increasing investments in advanced technologies. On the other hand, countries with large energy reserves use these resources as a strategic power tool in international relations and have an impact on the global balance of power [85].

Energy geopolitics, on the other hand, is a multidimensional field that calls for greater cooperation and dialogue in the international system. Stabilizing or effectively managing competition and conflicts of interest in this field seems essential for lasting and final solutions. In this context, policies that encourage cooperation are vital for both sustainability and the development of environmentally friendly and innovative energy technologies. However, chronic competition over energy resources makes tensions inevitable. Therefore, while energy competition may be inevitable, managing it through sustainable and peaceful mechanisms would constitute a more stable and long-term approach [14].

Likely, the struggle for power and dominance over energy and raw material resources will remain among the main issues occupying the international agenda for the rest of the 21st century. Therefore, it is important to keep international cooperation and approaches based on common norm-building

efforts on the agenda. While the current crises increase the pressure on energy geopolitics, this may also act as a parallel pressure tool on international organizations and agreements. Consequently, this may lead to a process of updating these organizations and agreements.

From a historical perspective, energy crises seem to have “recurrent” effects. For example, some parallels can be drawn between the oil crises of the 1970s and some of today's energy crises. The obvious difference is that the causes behind the crises at the time were clearly identifiable, and the search for solutions was mostly focused on reducing dependence on imported oil. Today's crises, on the other hand, are much more complicated. This is because this process is now a comprehensive phenomenon that involves not only traditional energy sources, but also natural gas, coal, electricity, and climate change. Therefore, the solution strategies to be determined are expected to address this wide range of areas and factors.

In the case of Türkiye, the country's energy policies are mostly geared towards meeting its growing energy needs and ensuring security of supply. The increase in energy demand, which is a natural consequence of Türkiye's rapidly growing economy and growing population, makes policies to reduce dependence on imports more urgent.

In this context, the most fundamental finding of this study is that Türkiye's energy investments are positioned to increase both supply security and foreign policy effectiveness. In particular, the projects developed are considered to be tools for strengthening Türkiye's position as a regional power, beyond energy security and economic benefits. The acceleration of renewable energy investments and the trend toward alignment with EU energy policies reveal that the energy transition is progressing in sync with foreign policy. In this regard, the study examines the energy transition not merely as a technical process but as a strategic whole in which geopolitical, economic, and environmental factors are intertwined.

In the energy transition process, Türkiye has adopted the 2053 Net Zero target as a strategic orientation; in this direction, it has defined its policy priorities in three main axes: ensuring energy supply security, increasing energy independence, and accelerating decarbonization. These pillars focus on sub-headings such as digitalization, energy efficiency, hydrogen and new technologies, market reforms, institutional restructuring, and the carbon market. In the current structure, where 59% of installed capacity is provided by renewable sources, project and distributed production investments are particularly noteworthy. However, the low share of modern renewable energy in final energy consumption indicates that transformation is still limited in areas such as grid integration, energy storage, and financial sustainability. Therefore, Türkiye's energy transition process is still in the “technical capacity development and regulatory compliance” phase and requires stronger structural steps to be taken in practice.

The relationship between the targets set out in policy documents and investment behavior has been evaluated based on concrete outputs during the implementation process. Energy projects carried out in Türkiye and the incentives provided directly affect the investment environment, leading to an increase in investment intensity and expansion of renewable energy capacity. Incentive policies are reflected in the field in terms of the number of new investments and increases in installed capacity. Within the scope of energy efficiency strategies, certain levels of energy savings are achieved as a

result of the applications, greenhouse gas emissions decrease, and application models based on public-private sector cooperation are becoming widespread. Despite Türkiye's continued high levels of energy import dependency, gradual improvements in energy supply security are being observed thanks to increasing renewable energy investments; this development is creating a relative balancing effect on the energy trade balance.

Accordingly, Türkiye's energy policies should be evaluated along three main axes: (i) increasing the exploration and production of domestic resources, (ii) ensuring diversity in energy imports (iii) increasing renewable energy investments. To accelerate energy transition and contribute to sustainable development goals, a series of policy steps can be proposed in the short, medium, and long term. In the short term, simplifying legislation and incentive mechanisms, establishing regular feedback channels to make the developed systems investor-friendly, and introducing microfinance applications that support entrepreneurship are priorities. In the medium term, it is necessary to gradually implement a national carbon pricing mechanism (carbon tax or emissions trading system), integrate the green finance taxonomy and sustainable investment guidelines into the legal framework, and implement green infrastructure projects such as smart grids and energy storage through public-private partnerships. In the long term, the establishment of technology R&D centers based on domestic production to reduce energy dependence, the implementation of mandatory emission standards across all sectors, and educational curriculum reforms centered on energy and climate literacy are among the key strategic priorities.

In conclusion, it can be said that Türkiye's energy transformation process involves a comprehensive policy that cannot be addressed from a single perspective. It is clear that this transformation process requires long-term strategies, strong investments, and infrastructure efforts. However, the gains to be achieved in the end will be able to meet both today's needs and the stability of the future.

## ACKNOWLEDGEMENT

This study has been compiled and prepared based on the chapter "Energy Geopolitics and Policies: The Case of Türkiye," previously published in the book *Energy Systems Analysis* by Batman University Press.

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