

# Istanbul Aydın University International Security Symposium



The banner features a dark blue background with a green and yellow diagonal stripe on the right side. At the top left is the Istanbul Aydın University logo. To its right is the text 'ISTANBUL AYDIN UNIVERSITY' and '20 Years' in a stylized font. Further right is the AKEV logo with the text 'ANADOLU EĞİTİM VE KÜLTÜR VAKFI'. Below these are logos for UN Women, UNESCO Chair in Cultural Diplomacy, Governance and Education, Istanbul Aydın University, Turkey; BİLİM KOLEJİ; KİÜ KIBRIS İLİM ÜNİVERSİTESİ; and TAM TÜRKİYE ARAŞTIRMALARI MERKEZİ İSTANBUL AYDIN ÜNİVERSİTESİ.

Turkish Culture and Thought Symposium

## I - SECURITY

(CAUCASUS-ANATOLIA-CYPRUS)

**/// 18 - 19 October 2023**

**Search and Rescue Operations in Earthquake** (Special Section)

**Turkey and Azerbaijan Relations**

**The Impact of Cooperation on Security in the Defence Industry**

**Energy Security**

**Clean Water and Sanitation**

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# ISTANBUL AYDIN UNIVERSITY INTERNATIONAL SECURITY SYMPOSIUM (ISTANBUL LOCAL TIME)

**DAY 1- 18 OCTOBER 2023**

## OPENING SPEECHES

<b>10.00-10.30</b>	<b>Assist. Prof. Dr. Ozgur TOR-</b> <i>Director of Turkiye Studies Application and Research Center</i>
	<b>Prof. Dr. Zafer ASLAN-</b> <i>Vice Rector of Istanbul Aydin University</i>

## SECURITY 10.30-12.15

**Moderator: Teach Assist. Nazli AKYUZ**

<b>10.30-11.00</b>	<b>Regulation by International Law of The Harm Caused by Technological Disasters in The Caspian Sea</b> <i>Assoc Prof. Serik Mukhametkazinovich SABITOV (Kazakhstan Alikhan Bokeyhan University)</i>
<b>11.00-11.30</b>	<b>Energy Security: Turkish Opportunities and Challenges</b> <i>Prof. Dr. Sureyya YIGIT (New Vision University)</i>
<b>11.30-12.00</b>	<b>A Comperission About Turkiye and Russia’s approach to South Ossetia-Abkhazia and Karabakh Issues</b> <i>Asst. Prof. Sina KISACIK (Cyprus Science University)</i>
<b>12.00-12.15</b>	<b>QUESTION-ANSWER</b>

**12.15-13.00- LUNCH BREAK**

## 13.00-14.30

**Moderator: Asst. Prof. Hazar VURAL JANE**

<b>13.00-13.30</b>	<b>Elements of Change and Continuity in 21st. Century Security</b> <i>Asst. Prof. Filiz KATMAN (Istanbul Aydin University)</i>
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## SEARCH AND RESCUE OPERATIONS IN EARTHQUAKE (SPECIAL SECTION)

<b>13.30-14.00</b>	<b>Search And Rescue Operations in Earthquake</b> <i>Prof. Dr. Arkadiusz KWIECIEŃ (Cracow University of Technology)</i>
<b>14.00-14.15</b>	<b>QUESTION-ANSWER</b>
<b>14.15-14.30</b>	<b>CLOSING REMARK</b>

**DAY 2- 19 OCTOBER 2023**

## TURKIYE AND AZERBAIJAN RELATIONS

<b>10.00-13.00</b>	
<b>Moderator: Asst. Prof. Arta ARMANI</b>	
<b>10.00-10.30</b>	<b>Development of Turkiye Azerbaijan Relationship</b> <i>Dr. Fuad CHIRAGOV</i>
<b>10.30-11.00</b>	<b>Development of Turkiye Azerbaijan Relationship</b> <i>Prof. Dr. Giray Saynur DERMAN (Istanbul Marmara University)</i>
<b>11.00-11.30</b>	<b>Solar and Wind Energy Sources as a Solution for Energy Security Risk and Minimizing Air Pollution in Northern Cyprus</b> <i>Prof. Dr. Huseyin GOKCEKUS- (Near East University)</i>
<b>11.30-11.45</b>	<b>QUESTION-ANSWER</b>
<b>11.45-12.00</b>	<b>CLOSING REMARK</b>

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# **International Legal Regulation Of Damage Caused As A Result Of A Man-Made Disaster In The Caspian Sea**

**Sabitov Serik Mukhametkazinovich**

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Annotation. The Caspian Sea, located in the center of Eurasia, is a unique systemic object and the main source of economic activity for neighboring countries. However, like many other marine basins, it is at risk of man-made disasters that can have devastating consequences for the environment and the economy of the region. This article discusses the importance of law enforcement cooperation in the prevention and management of such accidents in the Caspian Sea. International agreements and cooperation experience are analyzed, the main aspects of this problem are highlighted.

Introduction. The Caspian Sea, which washes the shores of five countries with unique environmental characteristics and natural resources, plays an important role in the regional and global economy. It is a source of energy resources, fisheries and transport routes for the countries adjacent to its coast. However, at the same time, the Caspian Sea has faced a number of threats, including possible man-made disasters caused by accidents on offshore platforms, oil and gas terminals, as well as shipwrecks; illegal fishing, pollution spills, destruction of marine ecosystems; waste of hazardous chemicals from chemical plants or accidents during the transportation of dangerous goods.

All these events can have serious consequences, therefore, cooperation and coordination between law enforcement agencies of the countries of the Caspian Sea coast play an important role in ensuring security and stability in the region. These include the exchange of information, the conduct of joint operations, and the development of coordinated plans and measures for crisis prevention and management.

## International cooperation and legal framework

Active international cooperation is necessary for the effective prevention and management of man-made disasters in the Caspian Sea. Multilateral and bilateral agreements between the countries adjacent to the sea are of great legal importance for this. Such agreements include the Convention on the Legal Status of the Caspian Sea and a number of other treaties.

The Caspian Convention, signed in 2003, established rules for the use of marine resources and measures to prevent and control pollution of the marine environment [1]. He also

established a framework for cooperation in the field of emergency prevention and management, including man-made natural disasters.

After the adoption and ratification of this Convention, there are unresolved issues. Subsequently, a number of Summits of coastal countries were held. The last of them and the most productive Aktau On August 12, 2018, during the Fifth Caspian Summit of the Presidents of Kazakhstan, Azerbaijan, Iran, Russia and Turkmenistan, the Convention on the Legal Status of the Caspian Sea was signed [2].

Article 15 of the 2018 Convention on the Conservation of Biodiversity plays a very important role. A comparative legal analysis of the content of this article shows that the following rights and obligations are assigned to coastal States:

- 1) The Parties undertake to protect and preserve the ecological system of the Caspian Sea and all its components;
- 2) the parties independently or jointly take and cooperate all necessary measures to preserve the biological diversity of the Caspian Sea;
- 3) the parties are obliged to ensure control over pollution of the Caspian Sea from any source;
- 4) activities harmful to the biological diversity of the Caspian Sea;
- 5) the parties are obliged to bear responsibility for the damage caused to the ecological system of the Caspian Sea.

On December 2, 2014, an agreement was signed between the Republic of Kazakhstan and Turkmenistan on the division of the bottom of the Caspian Sea between the Republic of Kazakhstan and Turkmenistan.

In accordance with the preamble of the 2014 Agreement on rights and obligations:

- The probability of occurrence of emergency situations of a natural and man-made nature that are not eliminated by the forces of the state of one of the parties and require coordinated actions by States to prevent and eliminate them;
- High degree of danger caused by emergencies;
- Responsibility to future generations for the preservation of the unique ecosystem of the Caspian Sea [3].

The object of cooperation under the 2014 agreement may be emergencies of a natural and man-made nature, that is, natural disasters and man-made disasters. The following types of natural hazards that can lead to disaster are distinguished for the Caspian Sea region: earthquakes, droughts, landslides, mud volcanoes. Man-made accidents: accidents in the oil sector, industrial accidents in coastal areas of states, communal accidents in settlements of the



Caspian region, consequences of interaction of natural hazards and industrial areas of the region.

Article 13 of the framework Convention regulates cooperation in environmental emergencies. An "environmental emergency" is a situation in which the environment of the Caspian Sea is damaged or there is a risk of pollution or other damage and is the result of a natural disaster or catastrophe caused by anthropogenic activities.

The cooperation of the Caspian littoral countries in the field of protection against natural disasters itself is a complex of various forms of interaction, enshrined not only in the 2014 agreement. This document establishes the following obligations of States:

1. Identification of dangerous actions that may cause an environmental emergency.
2. Informing other countries about such planned or ongoing activities.
3. Assessment of the impact of hazardous activities on the natural environment.
4. Implementation of risk mitigation measures.
5. Cooperation in the creation of early warning systems for industrial disasters and environmental emergencies.
6. notification of the presence of such situations or their danger.
7. Preparation of infrastructure, equipment, and personnel to respond to environmental emergencies.

Creation and improvement of a system of interaction for the prevention and elimination of emergency situations. In our opinion, this joint activity is one of the foundations for the formation of a cooperation mechanism. To do this, the States:

-taking into account the peculiarities of the region, the types of disasters and the peculiarities of the legal regime of the Caspian Sea, it is necessary to create national territorial units in this region that will prepare for emergency response;

- creation of an infrastructure for interstate interaction of territorial divisions for an effective timely response.

This document is a fundamental international treaty that defines and regulates the rights and obligations of the parties in relation to the Caspian Sea, including its waters, bottom, subsoil, natural resources and airspace.

The Convention regulates issues related to the delimitation of national zones, jurisdictions and sovereignty; the exercise of subsoil use rights; transit and transportation; laying of underwater pipes and cables; protection of the natural environment and biological resources of the Caspian Sea. Special attention was paid to security issues from the point of

view of countering modern challenges and threats, preventing and eliminating emergency situations, and military service of the Caspian littoral states.

#### Operational interaction

Law enforcement agencies of various countries adjacent to the Caspian Sea should maintain close operational cooperation to ensure the security of the maritime space. This includes the exchange of information on existing offshore platforms, transport vessels and infrastructure, as well as the coordination of operational activities in emergency situations.

#### Education and training

Regional law enforcement agencies should have access to modern equipment and technologies to identify potential threats early and respond to them. In addition, education and training of personnel, including specialists in emergency prevention and response, play a crucial role in reducing the risk of man-made disasters.

**Conclusion.** The interaction of law enforcement agencies to prevent man-made disasters in the Caspian Sea is an integral part of ensuring the safety and sustainability of this region. Effective cooperation at the international and regional levels, prompt response to threats and investments in personnel training play an important role in reducing the risk of man-made disasters and protecting the unique natural resources of the Caspian Sea.

Environmental protection of the Caspian Sea should be carried out in parallel with the development of cooperation on the prevention and prevention of various disasters. The Caspian littoral States need to further develop contractual cooperation in other areas of common interests and problems. We hope that new legal mechanisms will appear in the coming years. The Caspian Sea, despite the existing legal and organizational mechanisms, still has many unresolved issues, including in the field of protection from natural and man-made emergencies. Another task being solved by special structures for effective cooperation is the formation of a unified security mentality among the senior staff of structures in the participating States. Their decision-making should be based on an assessment of existing risks, the need for timely response, and interaction in accordance with established plans and scenarios. The difficulty in this case lies in the national and regional culture of communication and work, characteristic of Asian countries and regions, which can have a negative impact on solving the above problems.

## References

1. On the ratification of the Framework Convention for the Protection of the Marine Environment of the Caspian Sea. Law of the Republic of Kazakhstan dated December 13, 2005 No. 97
2. On the ratification of the Convention on the Legal Status of the Caspian Sea. The Law of the Republic of Kazakhstan dated February 8, 2019 No. 222-VI LRK.
3. On the ratification of the Agreement on Cooperation in the Field of Security in the Caspian Sea. The Law of the Republic of Kazakhstan dated June 30, 2014 No. 221-V LRK.
4. On the ratification of the Agreement between the Republic of Kazakhstan and Turkmenistan on the division of the bottom of the Caspian Sea between the Republic of Kazakhstan and Turkmenistan. Law of the Republic of Kazakhstan dated July 20, 2015 No. 335-V LRK

# ENERGY SECURITY: TURKISH OPPORTUNITIES AND CHALLENGES

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## **Introduction**

Over the past decade or so, there has been a growing interest in Turkey's place at the regional and international level, in particular through the proliferation of journalistic and scientific publications on the subject. Its economic and demographic growth, its position vis-à-vis the Arab-Muslim World at the end of the Arab Spring, its diplomatic investment as a border country in the Syrian crisis, its economic and ideological influence on the countries of Central Asia and the Caucasus, its rapprochement with Russia and China, and finally its role as a potential peacemaker between Russia and Ukraine have raised many questions about its desire to impose itself as a regional power. Moreover, its geographical position at the crossroads of Asia, the Middle East and Europe, between the hydrocarbon-producing countries in the East and the consumer countries in the West, gives it a major geostrategic role, with a potential energy hub focused on Russian energy sources being considered as an option.

Energy — a concept with multiple realities — is today an essential component of state policy. Since the Industrial Revolution, global energy demand has continued to increase and is exploding with emerging countries' arrival on the world market. The increase in consumers, the unequal distribution of fossil fuels across the planet and their limited quantities are intensifying the struggle between the powers to control resources and their supply routes. Turkey, a bordering country with more than 70% of the world's hydrocarbon resources, has become one of the main transit territories supplying the European Union.<sup>1</sup> Whether nationally or regionally, the energy sector now occupies a central place in Turkey's politics. This paper endeavours to shine a light on the geopolitics of energy in Turkey, identifying the central concerns relating to energy security.

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<sup>1</sup> Tocci, N. (2013). Turkey and the European Union. In *The Routledge Handbook of Modern Turkey* (pp. 237-245). Routledge.

One of the definitions of geopolitics is the study of the influence of geographical, economic and cultural factors on the politics of states and international relations. Geopolitics is a method of analysis that responds to a need to understand the contemporary world where the multiplication and interpenetration of issues and actors complicate the approach.<sup>2</sup>

When one investigates the geopolitics of energy in Turkey, perhaps the best approach is to consider a study focused on two pipelines, more precisely on the selection of the gas pipelines Trans-Adriatic Pipeline (TAP) and the Trans-Anatolian Gas Pipeline (TANAP), which transport resources from Central Asia to European markets via Turkish territory. From this prism, one can highlight dual interactions tied around this project. First, this approach reveals energy's central role in defining states' internal and external policies. These respond to strategic interests and projections of power based on a founding ideology and are expressed through the creation of alliances, conflicts and wars. In addition, the gradual substitution of oil for gas is shifting energy issues and transforming geopolitical interests and alliances. Secondly, how political, economic and social developments at the regional and global level at a given moment influence the internal policy of a state and its position internationally. For example, how the fall of the Union of Soviet Socialist Republics (USSR) transformed Turkey's relations with the European Union, the United States and the post-Soviet states of the Black Sea and Central Asia; or, more recently, the impact that the Arab Spring and the Syrian crisis and the very recent conflict taking place in Gaza have had and is having on Turkey's position in the Middle East. Third, how the political affirmation of emerging countries and the economic and identity crisis experienced by the West redefine Turkey's place on the world stage. Its membership in Western political and military institutions and its cordial relations with Asian and Middle Eastern countries testify to its role as a pivotal state.

The spatial boundaries of this paper cover the area identified as Eurasia. This is explained by choice of building a hydrocarbon transport route in Turkey and supplying it with the resources of the surrounding countries as the object of study. The terms "hub" or "pivot" refer to notions of "centre" and "hinge", which imply an inseparable relationship with the periphery, which requires several levels of analysis: national, regional and international.<sup>3</sup> One needs to examine the impact of energy issues on Turkey's relations with Europe to the West of Turkey, which is the main destination of existing and construction pipelines on Turkish

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<sup>2</sup> Granieri, R. J. (2015). What is Geopolitics, and Why Does It Matter? *Orbis*, 59(4), 491-504.

<sup>3</sup> Lu, X., Liu, Z., Ma, L., Wang, L., Zhou, K., & Yang, S. (2020). A robust optimization approach for coordinated operation of multiple energy hubs. *Energy*, 197, 117171.

territory; with Russia, in the North-East of Turkey, which remains the main supplier of Turkish and European gas; with the countries of Central Asia and the Caucasus, to the East of Turkey, which contain gigantic hydrocarbon resources; with the Middle East, to the southeast of Turkey, which is also rich in hydrocarbons; and finally with the United States, whose economic, political and military interests are present in all the abovementioned regions. Therefore, the geographical area of study is wide but will be a question throughout the reflection of refocusing on Turkey, which constitutes the basis of this research.

As far as the chronological limits are concerned, they extend from the fall of the USSR to the present day. In order to avoid falling into the pitfall of an overly hasty interpretation of the present time, it is necessary to take an interest in the causes and foundations of Turkey's current strategic position as a transit territory. Current energy policies, the formation of alliances, and the struggles for the domination of strategic territories derive directly from the period of the Cold War, which corresponds to the constitution of the Southern European Energy Corridor.<sup>4</sup> Knowledge of the founding period of national identity and Turkey's current position on the international scene enables one to situate the developments in Turkey's foreign policy over a long period, particularly in the relations it maintains with the Western powers and the nations formed on the ruins of the Empire.

The choice of a research subject results from the questions and expectations of society. To understand the stakes the chosen research object represents, one must focus on the knowledge concerning the subject. In the case of the study of energy in Turkey, the historiography is abundant, particularly since the beginning of the 2000s, when there has been a sharp increase in publications in newspapers and scientific journals. However, there are areas for improvement concerning the literature of the European Union and the American Administration since the beginning of the 1990s, when European energy policy was implemented and when the first pipeline projects were designed, bypassing Russian territory. The origin and quantity of scientific and journalistic productions on the subject of the transport of hydrocarbons via Turkish territory show clear concern. Indeed, in Europe, as in the United States, access to energy has been an eminently strategic issue since the end of the 19th century due to a lack of resources. The arrival of new players since the beginning of the 20th century in

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<sup>4</sup> Pardo Sierra, O. (2010). A corridor through thorns: EU energy security and the Southern Energy Corridor. *European Security*, 19(4), 643-660.

the world market for energy has exacerbated the concerns of civil society around the issue of energy access.

In recent literary works, at times, the trivialization of the terms hub, crossroads, and pivotal state to designate Turkey demonstrates both its advent as a regional power and the difficulty of clearly defining the geopolitical area to which it belongs.<sup>5</sup> This specificity has led foreign researchers to address energy issues in Turkey from an angle based on the regional approach. Existing works concern Turkey and its relations with Central Asia and the Caucasus, where the dominant approach is power rivalries between Russia and Iran for the domination of these territories. Relations between Turkey and the Middle East, where Turkey's position as a strategic ally of the United States is highlighted. Recently, there has been an increase in publications concerning the reception of the Turkish model in Arab countries. However, it is generally an ideological and cultural approach from which the creation of the term neo-Ottomanism derives. Finally, there are two dominant approaches to its relations with the European Union: Turkey's integration into the European Union and that of Turkey as a key element of European energy security.

Since the end of the 1990s, the academic literature on energy issues also noted sustained development in Turkey, as evidenced by the rise of research groups and journals – here, one can cite *Insight Turkey* and *Turkish Policy Quarterly*. With Turkey's entry into the liberal era, led by Ozal in the 1980s, one is witnessing the dual privatisation process and exit from the state of key economic sectors.<sup>6</sup> This translates into a multiplication of research work on the structural changes brought about by the energy sector privatisation and Turkey's alignment with European legislation regarding the regulation of the energy sector and the functioning of national institutions. The publications concerning the links between the energy strategy of the Turkish government and its influences on the definition of its neighbourhood policy are directly linked to the growth of the country's energy demand and the lack of sufficient resources on its territory, which obliges it to import almost all of its hydrocarbon consumption, which places it in a situation of strong dependence vis-à-vis its Russian and Iranian neighbours.

Given recent geopolitical changes in the Middle East, starting with the Arab Spring and the Syrian crisis, gas discoveries in the Eastern Mediterranean, the arrival of China as a major

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<sup>5</sup> Haugom, L. (2019). Turkish foreign policy under Erdogan: A change in international orientation? *Comparative Strategy*, 38(3), 206-223.

<sup>6</sup> Çelebi, I. (2013). *Türkiye'nin dönüşüm yılları: yeniden öğrenme zamanı*. Alfa Basım Yayım Dağıtım San. ve Tic. Limited Şti..

player in the energy market in Central Asia and the Middle East, and the reluctance of the European Union to accept Turkey as a member, there is a need to paint a picture of the political repositioning of Turkey within each of the areas surrounding it from an approach centred on the energy question.<sup>7</sup> The preference to focus on the selection of two gas pipelines and their geopolitical significance raises the question of the role of energy in the definition of Turkey's foreign policy, considering the developments at work, both in the energy sector and the surrounding regions.

How can one apprehend all of these factors in motion which interact? The contemporaneity of the chosen subject raises the question of the relevance of the sources. Those that serve the topic well are valuable tools for analysing Turkey's place in the energy strategies of the United States and the EU in Central Asia and the Middle East. Reports from Turkish institutions, gas and oil companies, and the press specializing in the energy sector shed light on access figures on the state of resources, the precise location and the progress of energy projects.

One would be remiss not to note that data produced by oil and gas companies, consulting firms or state institutions can be questioned. Indeed, data on energy consumption and production, exports and imports, as well as the quantities of hydrocarbons contained in the deposits, may be subject to manipulation in order to respond to political and financial interests. Along with the specialized press, the consultation of the Turkish and international daily press shows that energy projects are treated far from the public. The daily press does report on, for example, ministerial meetings around project proposals, but these are often short dispatches. It is not easy to know the ins and outs of current projects. However, it is not so much the announcement of projects that raises interest per se, but just as much the absence of information – which often denotes a political stake. In addition, the technical aspects of the energy sector require advanced scientific knowledge. For example, the physical and geological characteristics of deposits, the different kinds of gas and oil, and the variable forms of exploitation, drilling and transformation are essential elements for understanding the strategic interest that a territory represents. Access to information, therefore, presents limits, as does the complexity of the energy sector, where the lack of theoretical and technical knowledge can constitute an obstacle for the researcher.

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<sup>7</sup> Yiğit, S. (2013). Russian and Chinese Influences in the Middle East and Eurasia. *Middle Eastern Analysis/Ortadoğu Analiz*, 5(59).



The singularity of the angle of the approach chosen, starting first from the selection of the TANAP and TAP gas pipelines, then from the consequences of the realization of these on the Turkish energy policy, lies in the fact that it permits studying the links which unite the hydrocarbon producing countries to the consuming countries as well as to the transit countries. The study of the implementation of hydrocarbon export routes raises questions that have guided the thinking throughout this research. How does Turkey use energy diplomacy to position itself as a pivotal state in the region? How does the construction of the TANAP and TAP gas pipelines reveal Turkey's geostrategic place at the regional and global level, and how does it highlight the power struggles of the opposing forces for control of roads and energy resources? In the first instance, one must define the main notions of the geopolitics of energy, the energy challenges with which Turkey is confronted at the national level and the policy put in place to respond to them. Finally, the historical origins of the constitution of the Southern European Corridor give Turkey its current strategic role in the question of supply for European countries.

Moreover, examining energy's role in the links that unite the European Union and Turkey, how TANAP and TAP pipelines are selected, the benefits they mean for Turkey and the development of regional cooperation between Turkey, Azerbaijan and Georgia are quite important. One also needs to analyse competing projects to demonstrate the politics of energy transportation routes and Turkey's relations with its main suppliers, Russia, Iran and Azerbaijan. One must also look at how Turkey could benefit from the discoveries of hydrocarbons in the Eastern Mediterranean and the North of Iraq. The interference of the great powers, particularly the United States, in Turkey's energy policy and how the developments of recent years testify to the affirmation of a Turkish political identity independent of its traditional alliances is another factor that must be considered.

### **Geopolitics of Energy in Turkey**

A global approach to global energy issues is essential, defining the main concepts and challenges presented by the geopolitics of energy. One must look at how these challenges are reflected on the scale of Turkey and the government's energy policy to respond. Finally, one must examine the historical and geographical factors that have enabled Turkey to become an "energy hub".<sup>8</sup>

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<sup>8</sup> Yiğit, S. (2013). TURKIC ENERGY SUPPLY AND EU DEMAND. *Middle Eastern Analysis/Ortadoğu Analiz*, 5(60).

Why is energy an issue? The term "stake" includes the notions of risk and competition. In the case of energy, increasing demand is faced, but the resources for producing it exist in limited quantities.<sup>9</sup> Access to energy, therefore, represents a risk, that of a potential shortage, and is subject to competition between states to ensure their supply. This dual characteristic makes access to energy a geopolitical issue par excellence.

Energy issues respond to the same issues regardless of the scale studied. Post-pandemic global demand is increasing, particularly with the economic development of emerging countries. Non-renewable fossil fuels represent almost 85% of global consumption, which generates a race for the appropriation of resources and transit routes for them.<sup>10</sup>

In the global energy mix, gas is set to become the primary fossil fuel consumed. Gas is easily transportable, especially with the development of liquefied natural gas (LNG), and less polluting than other fossil fuels. With more than 1.3 billion inhabitants, China is a major player in the resource race; it is estimated to be the world's largest oil consumer by 2025.<sup>11</sup>

However, fossil fuels have the particularity of being limited and polluting, which increases the risk factor. Since the second half of the 19th century, their increasing use has been largely responsible for climate change. In recent decades, we have witnessed an awareness of their ecological consequences for the planet and the quality of life of current and future generations. Many initiatives have been put in place; one can cite the Earth Summits, at the United Nations (UN) initiative, which brings together world leaders every ten years and gives birth to the United Nations Environment Program. One notes the rise of Non-Governmental Organizations (NGOs) for protecting the environment, developing renewable energies, and fighting against nuclear power. However, the countries of the Global South, which will become the biggest consumers in the coming decades, are claiming their right to development. They highlight the very high cost of infrastructures that comply with environmental standards and the technical means that they require and remind industrialized countries of their share of responsibility in the current environmental situation.

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<sup>9</sup> Yığıt, S. (2012). Türkiye, Büyük Orta Asya ve ŞİÖ Pekin Zirvesi. *Middle Eastern Analysis/Ortadoğu Analiz*, 4(44).

<sup>10</sup> <https://www.planete-energies.com/en/media/article/what-energy-mix>

<sup>11</sup> Li, D., & Du, Y. (2004, September). The history and future of China oil and gas. In *SPE Annual Technical Conference and Exhibition?* (pp. SPE-89776). SPE.

## Energy Security

Energy security: a central element of the energy policies of geopolitics as a discipline that intends to apprehend the power rivalries around issues in a territory. If one stands by this definition, energy — particularly fossil fuels, which are non-renewable and the most consumed — represents a geostrategic challenge of the first order for governments. As fossil fuels are unequally distributed across the planet, hydrocarbon-consuming countries do not always have resources on their territory. This is the case for European countries, which import almost all their hydrocarbon consumption. This gives the producing countries a strong power in the face of which the importing countries find themselves vulnerable. The example of the gas war between Russia and Ukraine between 2006 and 2009 illustrates this energy dependence and the vulnerability of importing states.<sup>12</sup> The notion of "energy security" takes on its full meaning here. It is a question of diversifying the energy mix at the national level and the origins of hydrocarbon imports so as not to depend on a single actor. This also makes it possible to negotiate the purchase price of resources by highlighting the principle of competition. One witnessed this strategy in the energy policy of the European Union prior to the Russian invasion of Ukraine, which desired to reduce its dependence vis-à-vis the national company Gazprom, which held a virtual monopoly of the Russian gas sector. Since 2022, the EU has made a determined choice to minimize its energy imports from Russia.

Energy security is not conceived the same way whether a country is a producer or a consumer.<sup>13</sup> The producing countries' economies depend mostly on the energy sector; this is the case of Iraq, for which more than 90% of its economy is based on oil exports. Producing countries that can no longer export their hydrocarbons find themselves in economic asphyxiation. Iran has been under an international embargo for nearly thirty years and is experiencing major economic difficulties. On the other hand, Germany imported almost all of its gas from Russia before it invaded Ukraine but did not see itself as vulnerable vis-à-vis the latter; its energy security was assured since it could meet the country's demand.<sup>14</sup>

The problem of the dependence of consumer countries on producer countries is part of a more complex reality. Western countries discovered hydrocarbon resources at the end of the

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<sup>12</sup> Rodríguez-Fernández, L., Carvajal, A. B. F., & Ruiz-Gómez, L. M. (2020). Evolution of European Union's energy security in gas supply during Russia–Ukraine gas crises (2006–2009). *Energy Strategy Reviews*, 30, 100518.

<sup>13</sup> Yigit, S. (2012). Energy Security, Shanghai Cooperation Organization And Central Asia. Center for Middle Eastern Strategic Studies" ORSAM.

<sup>14</sup> Halser, C., & Paraschiv, F. (2022). Pathways to overcoming natural gas dependency on Russia—the German case. *Energies*, 15(14), 4939.

19th century. The first massive oil discoveries were mainly in Iran, Iraq and Syria. These nations, formed after the fall of the Ottoman Empire by the Western powers according to the distribution of their strategic interests, needed technical knowledge to exploit their national resources. Western companies built all the drilling, exploitation and refining infrastructure and divided the profits from the exploitation of the oil fields. Even today, access to technology remains a factor of dependence for many hydrocarbon-producing countries; foreign companies with the technical knowledge come to exploit the resources. This question of dependence on technical knowledge concerns the exploitation of fossil fuels and all forms of energy, from nuclear to renewable energies. This is particularly the case of Turkey, which calls on foreign companies for the construction of nuclear power plants as well as for the development of renewable energies. However, the import of knowledge and technical means leads to an increase in financial costs. The latter is also a dependence factor, which induces recourse to external investments. The challenges of access to energy are multiple, as well as the dependencies they generate.

### **Energy Transport and Territorial Security**

The notion of territory is an essential element to consider for understanding energy-related issues. The location of resources and their transport can only be understood by considering the territory and its geographical characteristics.

The geographical and geological situation determines the ease of access to the deposit and, therefore, its financial cost for exploiting the resources. Whether the deposits are on-shore, i.e., on land, or off-shore, at sea, the drilling and exploitation techniques differ and can influence the choice of the company according to its technical capabilities and financial geographical location, in the case of discoveries, can provoke power struggles between the inhabitants who defend their living places and the history of their territory and the private or state companies who want to take advantage of the resources. This comment applies not only to fossil fuels but to all kinds of energy production that require the construction of major infrastructures. At the international level, one is currently witnessing more frequent mobilizations of populations against establishing new infrastructures on their territory. One of the most prominent reasons is that of the preservation of the environment, but also of the history and the geographical identity of a territory.

Energy can be produced and consumed on-site or transported to external markets. The resources must cross territories to get from point A to point B. If the access routes are blocked,

the exporting country no longer benefits from its commercial rent, while the importer may suffer an energy deficit that risks damaging its economy. As with the location of resources, geography is to be considered. If transport is by land or sea pipeline, whether it crosses a plain or a mountainous landscape, the territory's characteristics influence the final cost of the goods. Hydrocarbon transport is carried by pipeline and transported by tanker: liquefied natural gas or oil is stored in barrels or cylinders and transported by trucks, trains or boats. The places of passage of these are most often nerve centres of transit: the Strait of Hormuz, the Suez Canal, the Turkish Straits, and border areas. The trade-in of energy resources depends on the political situation of the territories crossed. Focusing on escalating tensions with Iran, the closure of the Strait of Hormuz would considerably alter the world trade in hydrocarbons. In Turkey, particularly in the southeast, territorial security is a recurring problem. The Kirkuk-Ceyhan pipeline, which has its source in Iraq and crosses territories where a large majority of Kurds live - a population in conflict with the central government for over thirty years - is regularly damaged by attacks or sabotage, thus reducing oil flow. The demographic and social data of the transit territory are inseparable from the notion of energy security. The latter applies similarly to the electricity sector, production sites, distribution and transmission networks.

### **What is a hub?**

The term hub designates the central part of a wheel. The image speaks for itself; an energy "hub" is the part in the centre of a system that allows its operation. Turkey is described as a "hub", an "energy corridor", and a "transit territory". Accordingly, a country which defines itself as a "hub" must anticipate its consumption and the projections for the years to come, as well as those of the markets targeted by the transit of hydrocarbons. This implies having all the infrastructure necessary for energy trading, i.e., refineries, processing plants, oil and gas terminals, and a hydrocarbon transport network. Unlike the terms "corridor" and "transit", which designate a simple passage, the term "hub" refers to the establishment of a complex system which emanates from a state policy. Therefore, its central geostrategic position could allow Turkey to become a "pivotal state", that is to say, an indispensable element for the periphery and a centre of power around which the poles surrounding it revolve.<sup>15</sup>

The two key notions of geopolitical analysis are that of territory, as discussed above, and that of actors, which will be addressed in this section. The main focus will be on the hydrocarbon sector. Many questions spring to mind: How are oil and gas agreements decided

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<sup>15</sup> Fuller, G. E. The New Turkish Republic: Turkey as a Pivotal State in the Muslim World.

between producing countries, operating companies and consuming countries? What is the exact nature of these arrangements? What power do states have over these multinational companies? Knowing the players to understand the functioning of the energy sector and the hydrocarbon market is imperative. Like all strategic sectors, which include major financial stakes, in particular the arms market, the pharmaceutical sector or even the chemical industry, a certain opacity encompasses the operation of these business lines. It should be noted that oil and gas companies stand out as the largest stock market capitalizations on the planet.

Regarding the market, "timing" is essential to understand the functioning of the market. This means that companies organize the exploitation of resources in different places according to their interests. The exploitation in the Caspian Sea represents a very high cost due to the difficulty of access to the resources, contrary to the Iraqi resources, which are easily exploitable. However, if companies export Iraqi resources at low prices before those of the Caspian Sea, their investments in exploiting the Caspian Sea will no longer be profitable. Therefore, companies must coordinate sales according to their respective costs. In other words, the oil and gas companies control the entire hydrocarbon market with a noticeable lack of transparency.

Apart from the oil and gas companies, there is a nebula of actors. Who are the actors conducting scientific and geological research, producing reports, and setting market prices? Who buys the resources, resells them, and distributes them? What links do the States maintain with these companies? The latter are often multinationals due to the multiplication and diversification of their shareholders. One is also witnessing the proliferation of subsidiaries and sectors of activity. The energy market is not limited to hydrocarbons; it also includes all other forms of energy, coal, nuclear, renewable energies, and the electricity sector, each composed of many actors and sub-sectors. The energy sector also includes all research upstream of energy production and resource extraction. Mention should be made of prospecting and drilling companies for the search for hydrocarbons, such as Schlumberger, Technip or Halliburton. Prospecting for new resources falls within the domain of geomorphology and requires very sophisticated scientific knowledge and substantial financial means. Mention must also be made of the actors who deal with constructing energy infrastructures, i.e., the design and technical realization of all the mechanisms necessary for energy production. Another sector linked to energy is the flourishing sector of consulting and risk analysis firms, which work independently of large companies. They provide reports on the state of resources and infrastructure and the political and economic risks of the countries where the energy companies are established.

With the liberalization of the world economy, one is witnessing a more complex market due to two simultaneous phenomena, namely the multiplication of private actors and the withdrawal of the state from the sectors of transport, industry, electricity, and energy production, which were previously exclusively managed at the national level. The number of actors and the opacity of the energy sector make it difficult to access information and constitute an obstacle to research.

### **Challenges Facing Turkey**

The study of the geopolitics of Turkey in its regional environment is only possible with the analysis of its national issues. Investigating Turkey's energy challenges and the means it proposes to meet them, one comes across the following. In terms of internal causes and dynamics, the recall of the demographic, social and economic factors of Turkey, as well as geographical and historical characteristics, make it possible to draw up a picture of the country which constitutes the object of this research. Concerning demographic and the social situation, Turkey has approximately 85 million inhabitants.<sup>16</sup> The population density is 94 inhabitants per km<sup>2</sup>, but it is very unevenly distributed over the territory. The capital Ankara, Istanbul and Izmir is where most of the country's economic activity is concentrated, all three cities in the West. Between the West and the East of Turkey, there are big disparities in economic and industrial development, population density, fertility rate and literacy of the population. The region of southeastern Anatolia, mainly populated by Kurds, has the lowest development indices. The country is approximately 96% Muslim, 0.6% Christian and 3% other confessions. Regional disparities and conflicts between minorities and the central government should be seen in light of the Ottoman past and the birth of Turkey as a nation-state. The Republic of Turkey was founded on a unitary civic ideology of the nation, that is to say, on territorial, linguistic and religious unity, yet it is heir to a multicultural, multiethnic and multilingual empire. Denying the diversity of identities on Turkish territory today raises political and social tensions.

The Turkish government for decades pursued a protectionist economic policy. In the 1980s, Turgut Özal, first Minister of Finance and then President of the Republic, brought Turkey into the era of the global economy by adopting the principles of a liberal economy and opening his country to foreign investment. The end of the 1980s corresponded to the arrival of

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<sup>16</sup> Turkish Statistical Institute. (2023). Retrieved from <https://data.tuik.gov.tr/Bulten/Index?p=The-Results-of-Address-Based-Population-Registration-System-2022-49685&dil=2>

gas in the big cities (Istanbul, Ankara, Izmir). Since then, Turkey has experienced rapid development and is now one of the twenty largest economies in the world. It recorded a GDP (in nominal parity) of 905 billion dollars for 2022.<sup>17</sup> The energy sector represents only 2% of the GDP but has become a decisive stake in the economic development of Turkey. It is a privileged investment sector for Turkish private companies and foreign direct investment (FDI). The largest Turkish companies have invested heavily in this sector in recent years. If one looks at companies such as Koç, Sabancı, Alarko, Dogan, the energy sector now occupies first or second place in their fields of activity. In contrast, it was almost non-existent twenty years ago. Turkey's economic development has seen the rise of a consumer middle class, a large part of which comes from the rural exodus and settling in the new towns of Anatolia. Turkey is now considered an emerging power, not only because of its demographic weight but also because of its growth and economic development.

Turkey's massive energy consumption increase is considerably increasing its dependence on fossil fuels (coal, oil, gas), representing most of its consumption. Coal remains an essential resource in the production of electricity in Turkey. Today, electricity represents the largest share of total energy consumption, ahead of the industrial and transport sectors. Given that the volume of electricity produced is increasing, it is necessary to develop the electricity transport and distribution network, especially since the electricity network now reaches Turkey's previously underserved regions, including the eastern part of Turkey.

Turkey has a very small quantity of fossil energy on its territory. However, most of its energy consumption is based on the fossil fuels it imports. Given the increase in consumption, this represents an increasingly significant financial cost. The Turkish government's energy policy has three objectives to ensure its energy security: Turkey must diversify its energy mix by developing nuclear energy and renewable energies, diversifying the origins of hydrocarbon imports, and positioning itself as a major transit country.

Diversifying the energy mix means developing different kinds of energy production to reduce dependence on a single resource type. Today, energy production in Turkey is mainly based on the natural gas it imports. Developing different kinds of energy, such as hydropower, nuclear power, and renewable energies, will eventually make it possible to minimise fossil fuel imports and generate energy from national resources. In addition, the impact of climate change

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<sup>17</sup> Turkish Statistical Institute. (2023b). Retrieved from <https://data.tuik.gov.tr/Bulten/Index?p=Quarterly-Gross-Domestic-Product-Quarter-IV%3A-October-December%2C-2021-45548&dil=2>



and ecological standards is pushing governments to promote the development of "clean" energies and energy efficiency. Clean energies include all types of energy production that do not emit greenhouse gases, i.e., nuclear, hydraulic, solar, wind, and geothermal energy.

Turkey has significant hydraulic resources in the North in the Black Sea region and the East, with the hydraulic basin located between the Tigris and the Euphrates. Currently, it is in the Black Sea region that there are the most hydroelectric projects. For over a decade, conflicts between the population and private companies over constructing new dams have been recurrent.

The problems raised by the construction of hydroelectric power plants paradoxically concern environmental aspects. The multiplication of hydraulic projects on the same river can cause water shortages downstream, drying up agricultural areas and an imbalance of wildlife. This problem stems partly from the energy sector privatisation, which opened the energy market to private companies and favoured the development of small hydroelectric plants. The largest dams remain state property, as with GAP (Güney Anadolu Projesi), which includes 19 hydroelectric power stations and 22 dams.<sup>18</sup> The latter has raised several conflicts at the regional and national levels. Upstream of these two rivers, the GAP considerably reduces the volume of water for Iraq and Syria, which are located downstream of the rivers.

Moreover, since the beginning of the construction of the GAP project, Kurdish associations, the majority ethnic minority in the Southeast of Anatolia, have opposed the Turkish government on the realization of the project. The construction of the dams involves flooding territories claimed by the Kurdish minority as cultural heritage. The city of Hasankeyf, in the Diyarbakir region, recently classified as a UNESCO historical heritage site, was submerged by the impoundment of the Ilisu dam.

### **Turkey, Nuclear Energy and Renewable Energy**

Since 1956, Turkey's General Secretariat of the Atomic Energy Commission has attempted to acquire nuclear energy. In 2007, the TAEK (Turkish Atomic Energy Authority) relaunched Turkey's nuclear program and launched a tender to construct three nuclear power plants. The Turkish government plans to increase the share of nuclear energy in national electricity production. Developing nuclear energy in Turkey aims to reduce its energy dependence. However, looking at the origin of the funding for nuclear power plant projects, one sees that they come from outside investment, with contracts in the form of Public-Private

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<sup>18</sup> Bilgen, A. (2019). The southeastern Anatolia Project (GAP) in Turkey: an alternative perspective on the major rationales of GAP. *Journal of Balkan and Near Eastern Studies*, 21(5), 532-552.

Partnerships; the infrastructure is, therefore, not the property of the Turkish state. When Turkey launched a call for tenders for constructing the three nuclear power plants, the specifications needed to be completed, so all the companies withdrew, except the Russian company Rosatom. The Akkuyu power plant project near Mersin was therefore awarded to the Russian company. The contract signed with the Russian company Rosatom for the Akuyyu nuclear power plant stipulates that the Turkish state must buy the electrical energy produced from Russia. Russia will ensure the operation and supply of the plant with fuel throughout its life and will also take care of waste recycling. In exchange, Turkey undertakes to buy back at least 50% of the power plant's electricity for 0.1235 dollars per kWh for 15 years, with the rest being able to be sold at the market price. The Turkish government is seeking to free itself from the Russian monopoly in energy, which no longer only translates into the import of natural gas but now takes other forms. For the second nuclear power plant located at Sinop on the Black Sea coast, China, South Korea, Japan, Canada and France are competing to respond to the call for tenders. Like that of Akkuyu, this project generated a strong protest from Turkish civil society; several NGOs, including Greenpeace, are fighting against the development of nuclear power in Turkey. They highlight that Turkey is located at the junction of several tectonic plates and the environmental danger it represents.

By 2023, the Turkish government expects the share of renewable energies to reach 30% in the Turkish energy mix. Renewable energies have development potential and will hold an important place in the Turkish energy mix in the future. Renewable energies are, therefore, an attractive investment sector for private companies.

With the various conflicts that energy issues can generate at the local level, one sees an increase in mobilizations on the part of civil society around territorial issues and environmental. Moreover, on the other hand, the concrete achievements of the policy of diversification of the energy mix with the increase in the capacity of each of the energies mentioned. All of this data shows us the extent of the growth of the sector in Turkey and the place attributed to it in the policy of the Turkish government.

Alongside the diversification of its energy mix at the national level, the Turkish government is seeking to diversify the origins of its fossil fuel imports. Turkey depends mainly on its neighbours Russia and Iran for gas and oil. The diversification of imports allows a country to reduce the share of each of its suppliers and, therefore, no longer depend on a single player.

New contracts have gradually enabled Turkey to reduce its dependence on Russia and Iran, its two main gas and oil suppliers. The import of gas from Azerbaijan in 2007 contributed significantly to diversifying import origins. The contract signed with Azerbaijan allowed Turkey to renegotiate the import price of Russian gas. The purchase price of 1000 m<sup>3</sup> of gas by Turkey from Azerbaijan was 350 dollars, 406 dollars from Russia and 500 dollars from Iran. Ten years ago, the Turkish government renewed its contract with Algeria to import four bcm per year of LNG for ten years, the volume of which will be expected to double in the coming years. In this dynamic of reducing its dependence on imports of hydrocarbons, the Turkish government launched, in 2008, a hydrocarbon prospecting campaign throughout Turkey. Initially, three million m<sup>3</sup> of gas were discovered in the Marmara region, the exploitation of which would cover 3 to 5% of national demand; research continued in the Gulf of Saros, in the Aegean Sea and the Black Sea. Research for the discovery of shale gas is carried out in Central Anatolia and the Southeast of Turkey. Oil is also being prospected in Southeast Turkey and the Black Sea region.

### **Turkish Energy Sector Actors**

How does the energy sector work in Türkiye? What state institutions govern it? How has this sector evolved since Turkey entered the liberal economy? The Ministry of Energy and Natural Resources was created in 1963 and determines the national energy strategy. The main goal is to ensure the energy security of the Turkish state while contributing to economic growth. It is also committed to developing the natural resources present on Turkish territory. The three institutions directly attached to it indicate the importance of energy security and the development of national resources for the Turkish state. These are the General Directorate of Mineral Research and Exploration (MTA) and the Turkish Atomic Energy Authority (TAEK), as well as the General Directorate of Renewable Energy (YEGM). Other national institutions and companies work in cooperation with this ministry; these are the companies in the electricity sector (EUAS, TEIAS and TETAS), the General Directorate of Turkish Coal Enterprises (TKI), the transport company Oil and Gas Company (BOTAS), Turkish Petroleum Company (TPAO). The Ministry of Water and Forests oversees hydraulic infrastructure attached to the General Directorate of Hydraulic Works (DSI). The Ministry of Environment and Urban Development works with the Ministry of Energy and Natural Resources. A reorganization of the sector took place in 2001 with the application of Law 4646, which is part of the integration of Turkey into the European Union and aligns Turkish legislation with European legislation for the entire energy sector. This 2001 law is the origin of the foundation of the Energy Market Regulatory

Authority (EPDK), a fundamental institution for understanding the current functioning of the energy sector in Turkey. It oversees all the gas, oil and electricity sectors. This institution operates independently of the ministries with which it works. Its main role is to enforce regulatory and privatization laws, issue licenses for the entire energy sector and monitor the proper functioning of the infrastructure. It has a coercive power which gives it the right to sanction companies that do not meet the standards imposed.

Since adopting the 2001 law concerning the regulation and privatization of the energy sector, a series of laws intended to make the Turkish energy market competitive were voted on. They impose privatising national companies in the gas, oil and electricity sectors. The process of privatization of national companies has led a considerable number of Turkish and foreign private companies to invest in the sector. Laws n° 4628, 4646 and 501564 impose the separation of production, transport and distribution to abolish any monopoly in the electricity, natural gas and oil sectors. In the electricity sector, this process is well advanced. The former national electricity company (TEAS) was divided into three companies: for the production of electricity (EUAS), the transport (TEIAS), which concerns the transport of electricity on high voltage lines, and the distribution (TEDAS), which concerns the distribution of electricity within cities. The Oil and Gas Transport Company (BOTAS), which owns almost all of Turkey's pipeline network, is being privatized. Turkish oil refinery corporation Tüpras **retains 86%** of the total refining capacity in Turkey, with four refineries in operation and two under construction. Turkish Oil Company TPAO no longer has a monopoly on the oil market in Turkey. Sees the emergence of private Turkish companies, such as Calik Enerji, Koç or Sabanci, which have numerous subsidiaries in all energy sectors, from oil production to renewable energies. Following this review, let us examine the causes and factors that have determined Turkey's current position as a strategic player in the hydrocarbon trade, despite the lack of resources on its territory.

### **Turkish Aspiration: Energy Hub of Europe**

Any country's situation at a given moment is the sum of its history and geography. In this part, one will recall the main geographical characteristics of Turkey and the key dates of its foreign policy. Here, one needs to examine the issues of the Baku-Tbilisi-Ceyhan (BTC) and

Blue Stream, the first pipelines crossing Turkish territory, which directly echo the energy issues that arise with the possible expansion of TANAP.<sup>19</sup>

Turkey is 780,576 km<sup>2</sup>, and the territory extends from West to East, with 3%, or 23,378 km<sup>2</sup>, on the European continent. Thrace Eastern (European part) is separated from Anatolia (Asian part) by the Sea of Marmara and the straits of the Bosphorus in the East and the Dardanelles in the West. Four seas surround it: the Mediterranean to the South, the Aegean to the West, the Black to the North and the Marmara Sea to the Northwest. Armenia and Azerbaijan separate it from the Caspian Sea to the East. Turkey is divided into seven regions:

The Aegean region, the Black Sea region, the Central and Eastern Anatolia region, the Marmara region, the Southeast Anatolia region and the Mediterranean region are subdivided into eighty-one provinces. It borders nine countries: Greece and Bulgaria to the Northwest, Cyprus to the Southeast, Syria to the South, Iraq and Iran to the Southeast, Azerbaijan and Armenia to the East and Georgia to the Northeast. Located in the heart of the Eurasian continent, the geopolitical area to which Turkey belongs is difficult to define.

The strategic position of a country does not only depend on its geography; it evolves simultaneously with the transformations of global issues. The discoveries of unconventional gas in North America could diminish Turkey's strategic interest as an energy corridor for Europe if the United States and Canada were to export their resources to the European market. Similarly, the resources of Central Asia and those discovered in the Eastern Mediterranean and Northern Iraq could be exported to the East. China and India, with nearly three billion inhabitants, are experiencing an explosion in their demand for energy. In this case, Turkey would no longer constitute a geostrategic territory. Whether these two hypotheses come true or not, demonstrate to what extent the historical, political and geographical context at a given moment is essential for understanding a strategic issue.

The Republic of Turkey was founded in 1923 by Mustafa Kemal Atatürk after a victorious war of independence against the adversarial powers of World War I. From its inception, Turkey became progressive, turned to the West, politically and ideologically. It is affiliated with major international institutions; it was a founding member of the United Nations (UN) later joining NATO, the Council of Europe, the Organization for Security and Cooperation in Europe (OSCE) and associating with the EEC in 1963. In addition, it was a

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<sup>19</sup> Yiğit, S. (2013). TURKIC ENERGY SUPPLY AND EU DEMAND. *Middle Eastern Analysis/Ortodogu Analiz*, 5(60).

founding member of the Organization for Economic Development (OECD), becoming a member of the World Trade Organization and the G20. Turkey participated in the Union for the Mediterranean, and since 1999, it has been an official candidate for the European Union, still under negotiation today.

Historically, Turkey is, therefore, deeply linked to the European geopolitical whole. However, the European Union members' reluctance to its membership has pushed it to diversify its political partnerships. This is also reflected at the economic level. However, Europe remains the main destination for Turkish exports. Turkey is turning to other markets, particularly the Middle East, the countries of the former USSR, Asia and 'Africa. Some significant dates: In 1969, Turkey became a member of the Organization of the Islamic Conference. Since 1992, it has been a Black Sea Economic Cooperation member headquartered in Istanbul. The AKP came to power in 2002 and gradually began a policy of rapprochement with the Middle East, which was accentuated by the Arab Revolutions. In 2008, Turkey signed a cooperation treaty with the six member states (Saudi Arabia, Oman, Qatar, Kuwait, United Arab Emirates and Bahrain) of the Gulf Cooperation Council. In 2010, an agreement was signed to establish a free trade area between Turkey, Syria, Lebanon and Jordan — given the current circumstances, this has not yet given the following. The publication of numerous articles on Turkish neo-Ottomanism in recent years bears witness to the awareness of Western countries of this new orientation in terms of foreign policy.<sup>20</sup> The multiplication and diversification of alliances indicate that Turkey tends to impose itself as a regional power at the junction of several geopolitical spaces. The map above gives a good view of Turkey's relations with the various geopolitical units that surround it.

### **Post-Cold War Caspian Region and the Southern European Corridor**

The end of the Cold War was a turning point in Turkey's foreign policy. Affiliated to the Western bloc by its membership in NATO, the Iron Curtain separated it over forty years from its neighbours in the Soviet area. The implosion of the USSR opened its borders to the East to the hydrocarbon resources of Central Asia, to the North to the countries around the Black Sea and to the West to the Balkan countries.

The BTC, coupled with the BTE, constitutes a turning point in the history of energy in the 20th century: it allows Europe and the United States to import oil and gas without going through Russia, Iran or the Gulf countries. Before the fall of the Soviet Union, all the

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<sup>20</sup> Candar, C. (2021). Turkey's Neo-Ottomanist Moment. A Eurasianist Odyssey. Transnational Press London.

hydrocarbon reserves of the Caucasus region passed through the USSR. In 1991, when the USSR imploded, Western oil companies seized the opportunity to exploit the oil and gas resources of the Caspian Sea, discovered by the Russians but still unexploited due to a lack of technical means. The former Soviet republics, for their part, want to free themselves from Russia, so they call on Western companies to export their resources to the international market without going through Russian territory.<sup>21</sup> The United States has since pursued an active policy of political and economic support in the Caucasus and Central Asia region. Two elements reveal the importance of Central Asia for the American government: In August 1999, President Clinton signed The Silk Road Strategic Act and the US State Department established a unit in charge of energy issues, focusing on the Caspian Sea region. Turkey, an ally of the Western bloc and a member of NATO, is the privileged territory for transporting hydrocarbons from Central Asia to Europe. The choice of the route taken by this pipeline has the advantage of avoiding Russia to the North and Iran to the South. Accordingly, three possibilities present themselves to the West. The first is the most logical and obvious: to build a modern and efficient tube that joins the Iranian oil pipeline system. It is the shortest route and, therefore, the most economical solution. However, the Americans vetoed it: Iran is the enemy, one of the "Axis of Evil" powers. The second solution is to go through Armenia, but that would require an agreement between Azerbaijan, Armenia and Turkey and a settlement of the Nagorno-Karabakh conflict, which was not an option for Armenia and Azerbaijan, the tensions being too high between the two neighbours.<sup>22</sup> Therefore, Georgia will be chosen as the transit country between Azerbaijan and Turkey.

The Baku-Soupsa pipeline, which has linked Azerbaijan to the Georgian Black Sea coast since 1999, already has the function of exporting gas from Central Asia to Europe without passing through Russia. In 2006 and 2007, the BTC and the BTE completed the Southern European Corridor system. To designate this new pipeline route, the expression "fourth corridor" is also used for the three energy corridors that supply Europe with hydrocarbons: the North from Norway, the North East from Russia and the South from the Maghreb.

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<sup>21</sup> YİĞİT, S., & Gülbiten, G. (2017). RUSYA'NIN YAKIN ÇEVRE DIŞ POLİTİKASI VE AZERBAYCAN. Barış Araştırmaları ve Çatışma Çözümleri Dergisi, 5(1), 54-70.

<sup>22</sup> Yığit, S., & Gülbiten, G. (2018). Rusya'nın Güney Kafkas Dış Politikası: Dağlık Karabağ ve Hazar Denizi. Barış Araştırmaları ve Çatışma Çözümleri Dergisi, 5(2), 1-30.

## **Contract of the Century**

Azerbaijan declared its independence after the dissolution of the Soviet Union and President Haydar Aliyev appealed to the major Western oil companies to exploit its resources. In September 1994, after three years of negotiations, the "Contract of the Century" was signed at the Gulistan Palace in Baku between Azerbaijan and the Western Oil Consortium for the exploitation of the Azeri Chirag-Guneshli fields located 120 km off Baku in the Caspian Sea.<sup>23</sup> The government of Azerbaijan will receive 80% of the profits from the exploitation, plus a share of its national company SOCAR. The remaining 20% will be divided between the companies taking part in the Consortium, which were divided between: SOCAR, British Petroleum, Amoco, Lukoil, Unocal, Statoil, McDermott International, Ramco, Turkish State Oil Company and Delta-Nimir. Russia claimed its right of ownership over the resources of the Caspian Sea. It was not until 2002, after diplomatic intervention by the United States with Russia, that construction was finally launched. The project was valued at 4 billion dollars, financed by the Consortium with the partnership of the World Bank. Inaugurated on July 13, 2006, 1774 km long, crossing three countries, Azerbaijan, Georgia and Turkey, connecting the Sea Caspian to the Mediterranean, it transports 800,000 barrels of oil per day. The BTC is supplied by the Azeri-Chengiz-Günesli oil fields and also by oil from the Kazakh Kasaghan field, which, from 2008, supplies 500,000 barrels of oil per day.

The BTC pipeline is doubled with the BTE gas pipeline, running from Baku to Tbilisi in Erzerum in eastern Turkey; it extends over 980 km and transports up to 20 million m<sup>3</sup> of gas annually. It came into operation in March 2007. It is the first gas pipeline linking the Caspian region to Europe without being controlled by Gazprom. One of Turkey's main NATO bases is located less than a hundred kilometres from Ceyhan, the arrival point of the BTC pipeline. Pipeline security is provided by BP and GUAM — a military alliance between Georgia, Azerbaijan, Ukraine, Uzbekistan and Moldova sponsored by NATO and the United States.

## **Blue Stream and Black Sea Economic Cooperation**

Turkey and Russia do not share common borders but have always shared common geographical space, whether during wars between the Russian Empire and the Ottoman Empire for control of Caucasian and Black Sea territories or, more recently, in the form of economic and energy cooperation. After the fall of the Berlin Wall, the two neighbours tried to reclaim

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<sup>23</sup> Howie, J. M., Robinson, N., Riviere, M., Lyon, T., & Manley, D. (2005). Developing the long-term seismic strategy for Azeri-Chirag-Gunashli, South Caspian Sea, Azerbaijan. *The Leading Edge*, 24(9), 934-939.



their common space by founding the Black Sea Economic Cooperation in 1992, at the initiative of Turkey, eleven countries around the Black Sea and the Caucasus region, including Armenia, Azerbaijan, Georgia, Greece, Romania, Russia, and Ukraine, signed the Bosphorus Declaration, giving birth to a regional organization based on economic and political cooperation to ensure peace, stability and prosperity among member countries.<sup>24</sup> This organization promotes regional integration through a common policy in transport and energy and deals with facilitating commercial exchanges. When it was created following the fall of the Soviet Union, it was, above all, symbolic.

This economic and energy cooperation between Turkey and Russia, the two powers of the region, materializes with the construction of a gas pipeline which crosses the Black Sea from the Russian coast to the North of the Black Sea to the Turkish coast, to the South. This gas pipeline makes it possible to avoid the Bosphorus and Dardanelles straits, already overloaded by the transit of maritime trade. On December 15, 1997, the governments of the two countries signed an intergovernmental agreement for the construction of the Blue-Stream underwater gas pipeline; simultaneously, Gazprom, the Russian national company and BOTAS, its Turkish counterpart, and the Italian company ENI, signed a contract for 25 years for the export of Russian gas to Turkey. 1,213 km long, of which 396 km cross the Black Sea, the gas pipeline connects the Russian Beregovaya terminal to the port of Samsun in Turkey. With a capacity of 16 bcm, the Blue Stream today supplies Turkey with 30% of its natural gas needs. It also allows Russia to diversify its gas export routes. During its inauguration in November 2005, Russian President Vladimir Putin launched the project to build an oil pipeline parallel to the Blue Stream gas pipeline as well as an extension that would link Samsun to Ceyhan to export Russian resources to the international market, bypassing Ukraine and Poland, a country with which Russia maintains tense diplomatic relations. The Blue Stream makes it possible, on the one hand, to meet Turkey's energy demand and, on the other hand, to counter the Western desire to bypass Russia by showing its ability to impose itself on the coveted transit routes by the European Union.

The approach to the geopolitics of energy from different spatial and temporal scales has allowed us to introduce a reflection on the place occupied by energy issues in the contemporary world. First, we proposed a thematic and global approach to the actors and issues relating to the energy sector; then, by narrowing the focus of the analysis, a targeted study on the current

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<sup>24</sup> Teleke, S. (2012). Black Sea Economic Cooperation (BSEC) towards Political and Economic Integration. *The Journal of Global Development and Peace*, (2), 22-32.

energy situation in Turkey; and finally, looking back over a longer period, to question the geopolitical foundations of Turkey as an "energy hub". Its centrality, geography and culture at the junction of three geopolitical areas opens up many perspectives for analysis. For clarity and consistency, I have chosen the last two pipeline projects concerning Turkey as an axis of reflection. The interest of this approach is, on the one hand, its current nature — in June 2013, TAP was selected by the Shah-Deniz Consortium to transport Azerbaijani gas to Europe, and on the other hand, the issues associated with the TANAP and TAP gas pipelines make it possible to address a multiplicity of geopolitical issues that revolve around Turkey.

Energy is not only a factor of production but also a determinant of the growth and economic development of States; it influences each of their movements when establishing alliances. The natural resources of the territory of Azerbaijan have been the most important element in its history. Under Soviet control, it was subjected to exploitation to satisfy the domestic needs of Moscow, which held the commercial monopoly in this region. With the collapse of the USSR, the diversification of its trade routes began, among which Iran was not considered an option, much less Armenia, due to the latent war danger. These new routes primarily aimed to transport energy resources to the European market. For this, Turkey, a country located between Europe and Asia, could not be a better alternative.

## **Conclusion**

The key project that has elevated relations between Azerbaijan and Turkey to higher levels is the Baku-Tbilisi-Ceyhan (BTC) oil pipeline, dubbed by the Turkish political sphere as the project of the century. Construction began in 2003 and entered service three years later. It is one of the most important projects in the region, which has contributed to maintaining strong and continuous cooperation between Azerbaijan and Turkey, as well as with Georgia. With an extension of 1,768 kilometres, it starts from Baku and ends in Ceyhan, off the Turkish Mediterranean coast. It is the second-largest oil pipeline in the world.

Of the three, Azerbaijan is home to hydrocarbons, Georgia fulfils the role of transportation partner due to its geographical location, and Turkey performs the role of facilitator to international markets and global partners. The BTC project has helped Turkey transform from simply a location for some of the world's major pipelines to a regional energy hub. Given the 1 million barrels per day capacity; this pipeline serves as a relief from the constant cargo traffic of the Turkish Strait.

According to data from BOTAŞ International, until last year, it was possible to transport almost 3.5 billion barrels, with 2010 being the year in which the highest crude load was exported with 286 million barrels. This energy cooperation process began with the BTC pipeline and continued with the inauguration of the Trans-Anatolian gas pipeline project (Trans-Anadolu Doğalgaz Boru Hattı) at the end of 2019. This new pipeline is part of the Southern Gas Corridor (SGC), the European Commission's flagship project, which aims to reduce the old continent's dependence on Russian gas.

TANAP has improved trade relations between the two countries. In March 2020, Azerbaijan became the largest exporter of natural gas to Turkey, surpassing Russia and Iran, which have historically been the main suppliers to the Turkish market. Ankara and Baku have supported each other both openly politically and in the commercial sector; both projects have geopolitically strengthened the interdependence between the two states.

The fraternal discourse used by Azerbaijan and Turkey has, in many cases, caused an incomplete understanding of the core of their bilateral relations. The "Turkish" factor is of great importance; the two are historically linked; they supported each other during their respective periods of independence and have not established diplomatic relations together for a long time with Armenia. However, there is also the desire to see their national interests satisfied; both saw the development of their bilateral relations as the ideal opportunity to benefit each other.

Undoubtedly, in the final analysis, this matter revolves around a win-win strategy: Azerbaijan has found in Turkey the perfect ally and a key route to open its natural resources to international trade. Not only that, it also has the security of its territorial sovereignty - especially after the end of the war against Armenia. On the other hand, Turkey is gaining a political and military presence, acquiring an increasingly relevant role in the region and reaffirming its regional leadership in Western Asia and the Islamic world.

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## A COMPARISON ON TURKIYE AND RUSSIA'S APPROACHES TO SOUTH OSSETIA-ABKHAZIA AND KARABAKH ISSUES

Sina Kisacik<sup>25</sup>

**Abstract:** The South Ossetia-Abkhazia and Nagorno-Karabakh Regions which were ruled by the Soviet Union till the beginning of 1990s, have passed into the control of Georgia and Azerbaijan after the disintegration of the Soviet Union. However, Russian strategy of firstly freezing then controlling the conflicts in these regions as the former hegemonic power of the region has been continuing since 1990s. In terms of Georgia, Moscow has been successful on the prevention of this country to become members of the Euro-Atlantic Bloc as well as its initiatives on protecting the rights of Russian minority existing there. On the other hand, concerning the Nagorno-Karabakh Issue, Russia following heavily balance of power politics as one of the co-chairs of the AGİT Minsk Group aimed at resolving this issue has changed its policy following the Second Karabakh War in 2020. In terms of the incidents experienced in 2023, it has declared not to involve. When we come to Türkiye, it has criticized Russia's Georgia policy and declared its recognition of territorial integrity of Georgia. On the Azerbaijani case, it has greatly contributed to the resolution of question in favour of Baku by comprehensively supporting it. Whether or not the reconciliation of completely different approaches of Türkiye and Russia which have been constantly developing the scopes of their relationships will be the case will stand a determinant factor in the future of Caucasia's security.

**Keywords:** Russia, Türkiye, Nagorno-Karabakh, South Ossetia, Abkhazia, Regional Security in Caucasia, USA.

### Türkiye ve Rusya'nın Güney Osetya-Abhazya ve Karabağ Meselelerine Yaklaşımları Hakkında Bir Karşılaştırma

**Özet:** 1990lı yılların başına değin Sovyetler Birliği'nin (SB) egemenliğinde kalan Güney Osetya-Abhazya ve Dağlık Karabağ bölgeleri, SB'nin parçalanmasını müteakiben Gürcistan ve de Azerbaycan'ın kontrolüne geçmiştir. Ancak Rusya'nın bölgenin eski egemen gücü olarak bu topraklardaki çatışmaları dondurulmuş hale getirerek kontrol etme stratejisi 1990lı yıllardan bu yana devam etmektedir. Gürcistan bağlamında bu ülkenin Avro-Atlantik kurumlara üye olma niyetini engelleme ve orada bulunan Rus azınlığın haklarını korumaya yönelik girişimlerde bulunan Moskova, bu konuda başarı sağlayabilmiştir. Öte yandan Dağlık Karabağ

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konusunda ise bu meselenin çözümü konusunda kurulan AGİT Minsk Grubu'nun eş başkanlarından birisi olarak ağırlıklı biçimde denge politikası yürüten Rusya, 2020'deki İkinci Karabağ Savaşı'ndan sonra bu politikasında değişikliğe gitmiştir. 2023 senesinde yaşanan olaylarda ise meseleye müdahil olmayacağını ifade etmiştir. Türkiye, Rusya'nın Gürcistan politikasını eleştirerek bu ülkenin toprak bütünlüğünü tanıdığını ifade etmiştir. Azerbaycan konusunda ise bu ülkeyi kapsamlı bir biçimde destekleyerek sorunun Bakü lehine çözülmesinde büyük katkı sunmuştur. Özellikle 2000li yıllarda aralarındaki ilişkinin boyutlarını sürekli olarak geliştiren Ankara ve Moskova'nın bu konulardaki farklı yaklaşımların ortak bir zeminde buluşturulup buluşturulmayacağı konusu Kafkaslar'ın güvenliğinin geleceğinde belirleyici bir rol üstlenecektir.

**Anahtar Kelimeler:** Rusya, Türkiye, Dağlık Karabağ, Güney Osetya, Abhazya, Kafkaslar'da Bölgesel Güvenlik, ABD.

## **Introduction**

The South Ossetia-Abkhazia and Nagorno-Karabakh Regions, governed by the Soviet Union (SU) until the initial years of 1990s, have begun to be controlled by Georgia and Azerbaijan following the downfall of SU. Nevertheless, Moscow's approach of initially cooling later on establishing dominance over the confrontations within those areas as the ex-hegemonic power of the region has been ongoing subsequently 1990s. For Georgia, Moscow has remained effective over the stoppage of this country to turn out to be a party of the Euro-Atlantic Bloc along with its steps with regard to defending the privileges of Russian minority residing in that country. In contrast, relating to the Nagorno-Karabakh Problem, Russia profoundly pursuing balance of power politics as one of the co-chairs of the AGİT Minsk Group formed with the intention of for the peaceful resolution of this subject has altered its strategy after the Second Karabakh War by 2020. Within the context of events happened within 2023, it has professed not to intervene.

In terms of Türkiye, it has disapproved Russia's Georgia strategy and also professed its acceptance of territorial integrity of Georgia. Concerning the Azerbaijani Issue, it has seriously underwritten to the settlement of conflict for Baku by expansively backing up it within the framework of diplomatic as well as diplomatic means. Whether or not the compromise of entirely dissimilar lines of Türkiye and Russia in these two issues which have been repetitively evolving the opportunities of their associations might stand the situation will be a determining factor within the forthcoming terms of Caucasia's security.

By taking into consideration the abovementioned context, this paper will try to elaborate the official standings of Türkiye and Russia in terms of Nagorno-Karabakh and Abkhazia-South Ossetia Questions in a comparative way. In line with this framework, the first part of the paper will be dealing with the comparative approaches of Ankara and Moscow concerning the Nagorno-Karabakh Issue. Then the second part of the paper will be focusing on divergent policies of Türkiye and Russia with regard to Abkhazia-South Ossetia Question. In the Conclusion part of this paper, some personal analyses and future projections on the researched subject will be shared.

### **1) Nagorno Karabakh: The Conflicting Positions of Türkiye and the Russian Federation**

Momentarily, it stands articulated as the invasion of Azerbaijani regions by Armenia, political and military actions of Armenia which were performed for alteration of the demographic structure of the area and the rejoinder of Azerbaijan to these activities. Karabakh stays not a sovereign nation-state and it stays not the property of Armenia. The most diverse feature of the Karabakh question nowadays in comparison with the previous times stands that it has turned out to be further internationalised. The Karabakh crisis stands no more the problematic of individually two states, nevertheless it remains an international topic within the attention of the great authorities and the worldwide public. The activities counter to the Azerbaijani public by Armenians for instance coercion, oppression, extermination as well as slaughter and the populace, migration and, placement strategies of the Soviet Union period that instigated destruction to the non-combatant residents have further transformed the case catastrophic and problematic to resolve. Karabakh, which stands positioned in the southeast of the Caucasus, has remained encircled by the placements of the Turkish tribes within the Azerbaijan district thru history. Nevertheless, subsequently the 19th century, nowadays's Armenia districts and the Karabakh area of Azerbaijan, stood intentionally reinvigorated with the Armenian people by Tsarist Russia and the Soviet Russian administrations. In a logic, the district would endeavour to stand Armenianized. On account of the migration strategies executed all through the Soviet Union, the demographic constructions of the Soviet Union nations converted mixed, symbolising numerous dissimilar nations. This status quo has instigated distinction in the logic of ethnic fitting, which correspondingly ran to a rearrangement that reinforced the Soviet supremacy (Koçer, 2022, pp. 3-5).

Additionally, the complications of ethnic assemblies with diverse nations in a firm political structure unfavourably impacted their relationships with each other, particularly in the



direction of the close of the 1980s. This state of affairs has heralded for struggles amid ethnic groups owing to the political authority emptiness formed by the downfall of the Soviet Union. On May 9, 1994, an armistice was contracted amid the pro-independence Armenians within Azerbaijan, Armenia, and also Karabakh. Thanks to the truce, the genuine invasion of Azerbaijan was halted. Nevertheless, on account of the Armenian outbreaks executed in two years, 20 percent of Azerbaijan's districts would be gone and also roughly one million Azeris would convert into refugees. The nomination of the United States, Russia, and France to the OSCE Minsk Group co-chairman by 1994 and the UN's activities vis-à-vis the resolution of the skirmish have stayed a hint that the problematic has developed a worldwide attractiveness (Koçer, 2022, pp.11-12).

The conversation of the Karabakh question on universal stages and the pursuit for a resolution within the global podium have distressed Moscow, for the reason that the area stands positioned in Moscow's near abroad strategy. Within that milieu, the Karabakh battle institutes a hindrance for Moscow's tactics to convert a world power as well as reiterate its domination within the area. Accordingly, Moscow, which has reinforced Armenia subsequently the commencement of the skirmish, has sustained for backing the Armenians subsequently the truce was contracted. Kremlin has intensively worked for keeping the United States and Türkiye away from the discontent within the area as well as sustained to back the Armenians subsequently the armistice was contracted. Moscow has given countless armaments and also ammunition to Armenians (German, 2022, pp. 1596-1606; Gafarlı, 2023, pp. 341-365). By 2006, "Prague Document" was issued. By 2007, a text termed "Madrid Principles" was issued. As stated by this text, it stands detailed that the Armenian invasion on the territories of Azerbaijan ought to finish, stabilisation of the relationships had better begin, and also a plebiscite must stand made for the own good of self-determination. Nevertheless, any of these initiatives have caused a tangible resolution as well as this has commanded to a stoppage in terms of peace progression subsequently 2009. The abuses of the armistice by Armenia have begun by April 2, 2016 and persisted for four days. This would be labelled as the "Four-Day War", afterwards which Azerbaijan began governing six additional districts in terms of its security. This overthrow has formed economic and motivational disadvantage impacts for Armenia, which had similarly undesirable impacts over the personality of Armenian leader Serzh Sargsyan as well as resulted in the in-country opposition to turn out to be tougher in contrast to him. Nevertheless, Moscow, as the most dominant local power, once more, has been

capable of forcing both parties for the settlement over armistice deal (Helvacıköylü, 2021, pp. 161-163).

As of September 27, 2020, additional ruin would happen and the conflict would commence amid Azerbaijan and Armenia. Armenia would target to control extra regions and Azerbaijan would force the enactment of UNSC resolution. The combat would continue for 44 days and conclude with the military accomplishment of Azerbaijan taking back its areas. By November 10, 2020, Russia would declare the reaching of an armistice deal which forecasts Armenia for leaving the Azerbaijan's invaded areas. The Ceasefire Deal was contracted as of November 9, 2020 by Azerbaijani President of the Republic Ilham Aliyev and Armenian Prime Minister Nikol Pashinyan with the conciliation of Russian President Vladimir Putin. Kremlin has declared as of November 10, 2020 that Nagorno-Karabakh Conflict finished (İsmayıl & Necefoğlu, 2021, p.234). Some facts of this truce treaty have mentioned the following:

*“1. A complete ceasefire and termination of all hostilities in the area of the Nagorno-Karabakh Conflict is declared starting 12:00 am (midnight) Moscow time on November 10, 2020. The Republic of Azerbaijan and the Republic of Armenia, hereinafter referred to as the “Parties”, shall stop in their current positions. 2. The peace-making forces of the Russian Federation, namely, 1,960 troops armed with firearms, 90 armoured vehicles and 380 motor vehicles and units of special equipment, shall be deployed along the contact line in Nagorno-Karabakh and along the Lachin corridor. 3. The peace-making forces of the Russian Federation shall be deployed concurrently with the withdrawal of the Armenian troops. The peace-making forces of the Russian Federation will be deployed for five years, a term to be automatically extended for subsequent five-year terms unless either Party notifies about its intention to terminate this clause six months before the expiration of the current term. 4. For more efficient monitoring of the Parties’ fulfilment of the agreements, a peace-making centre shall be established to oversee the ceasefire. 5. As agreed by the Parties, within the next three years, a plan will be outlined for the construction of a new route via the Lachin corridor, to provide a connection between Nagorno-Karabakh and Armenia, and the Russian peace-making forces shall be subsequently relocated to protect the route...” (Koçer, 2022, pp.16-17; Helvacıköylü, 2021, pp. 165-167).*

Consistent with the announcement, Ankara's standing as a sponsor capital city for Baku stands of superior standing in terms of both Azerbaijan's security and also Ankara's firming up within the South Caucasus. Throughout the Second Karabakh war, the vigorous usage of

Türkiye's Bayraktar TB2 drones by the Azerbaijani Armed Forces within the warfare, and the storing of Turkish F-16 fighter jets within Azerbaijan through the fighting can be gauged as clear sponsorship towards Azerbaijan. The involvement of Turkish President Recep Tayyip Erdogan, Foreign Minister Mevlud Çavuşoğlu, Defense Minister Hulusi Akar, and a sum of high-ranking state officials, along with a military element of the Turkish Armed Forces, within the "Victory Parade" organized within Baku by December 10, 2020, have been regarded for Azerbaijan along with decent backing, it can be treasured as a clear note to the authorities that have been attracting attentions within the area principally Baku (Öztarsu, 2021, pp. 179-181).

Here at this point of the paper, it is better to summarize how Türkiye has evaluated Azerbaijan's military operation within Karabakh that was held on 19 September 2023:

*“Due to the long-standing armed attacks and provocations directed against members of the Azerbaijani army and security personnel by illegal Armenian armed groups in the Karabakh region of Azerbaijan, the Azerbaijani army has launched today (19 September) an anti-terrorist operation which targets exclusively military elements. Azerbaijan had to take the measures it deemed necessary on its own sovereign territory as a result of the fact that the legitimate and rightful concerns it has constantly expressed about the situation on the ground in the past three years since the end of the Second Karabakh War, have not been resolved. We believe that result-oriented continuation of the comprehensive negotiation process that has been meticulously carried out between Azerbaijan and Armenia to date, is the only way for maintenance of peace, security, prosperity and lasting stability in the region”* (Republic of Türkiye Ministry of Foreign Affairs, 2023a).

Also, it must be discussed in this context that how Ankara evaluates the European Parliament's non-binding resolution on 5 October 2023 named as “On the Situation in ‘Nagorno-Karabakh’ after Azerbaijan's Attack and the Continuing Threats Against Armenia”. The official position of Ankara regarding this issue can be summarized as follows:

*“Türkiye exerts an intensive effort in establishing peace, stability and prosperity in the South Caucasus; conducts a normalisation process with Armenia; makes concrete contribution to the peace process between Azerbaijan and Armenia; mobilizes, within the framework of international law, all its capabilities to build peace, brotherhood and common interest throughout all conflict areas and humanitarian crisis, including the war in Ukraine; and stands as the key actor in this endeavour whose weight and efforts*

*are sought under the leadership of our President. We see it as a systemic weakness that those irresponsible texts that are taken seriously by nobody other than a few marginal sectors are recklessly laid before us as EP resolutions and therefore we do not take them seriously”* (Republic of Türkiye Ministry of Foreign Affairs, 2023b).

By 5 October 2023, as stated by the Russian Ministry of Defense, Russian peacekeeping forces have locked provisional barriers within Nagorno-Karabakh. Moreover, within this framework, it should be underlined that the Russian peacekeeping contingent stays to perform responsibilities within Nagorno-Karabakh. Non-stop collaboration stands upheld with Baku and Stepanakert intended for thwarting violence, guaranteeing security and upholding humanitarian rights of the non-combatant residents ([News.am](https://www.news.am), 2023). When we come to 13 October 2023, after Armenian PM Nikol Pashinyan has skipped the Bishkek, Russian President has underscored his country’s recent official standing concerning this issue as *“On the agenda is the preparation of a peace treaty (between Armenia and Azerbaijan - ed.) to finally put an end to this long-standing conflict. The Russian side is certainly ready to provide our partners with all possible assistance in this”. Russian side is ready to help organize negotiations in Moscow, if necessary, in any format”* (ARKA News Agency, 2023).



Available at: <https://perconcordiam.com/nagorno-karabakh-2020-2021/>, (Accessed on 13 February 2024).

## **2) South Ossetia and Abkhazia: The Conflicting Positions of Türkiye and the Russian Federation**

Abkhazia remains an existing self-governing nation, which stands individually recognized by Russia, Syria, Nicaragua, Venezuela, and Nauru. Consequently, excluding these five nation-states, Abkhazia stands lawfully a component of Georgia. The supposed Abkhazia skirmish has begun subsequently the disbanding of the Soviet Union when Georgia invaded Abkhazia. The 1992–1993 warfare would be the top of the struggle. Abkhaz public would win the warfare counter to Georgia and also within 1999 Abkhazia would approve the “Act of State Independence.” Though, it has taken nearly a decade for Moscow to adopt the statehood condition of Abkhazia. By 2008, afterward the Georgian-Russian War, Moscow has adopted Abkhazia as a sovereign nation, and ensured border security for Abkhazia to stop cross-border outbreaks originating from Tbilisi. Counter to Moscow’s sponsorships to Abkhazia, Tbilisi has blamed Moscow for invading Abkhazia. Through the tactical collaboration deal contracted amid Russia and Abkhazia by 2014, Tbilisi has more blamed Moscow for searching to invade Abkhazia (Balamir-Coşkun, 2022, p. 31).

The South Ossetia, or Georgian-Ossetian, Problem stays one of the most prolonged skirmishes of the contemporary era. Going back to the beginning of previous century, the unresolved substances of dispute—counting the representation of ethnic variety, recurring growth of patriotisms, ineffectiveness of organisations, state predicaments and regime deviations, unfair delivery of resources, and excessive power strategies— have resulted in the secessionist activities and strict strategies, contrariwise, and associated armed hostilities within decades. The explanations for the struggle have been defined contrarily by the combatant parties. As concerning the August War 2008, Georgia has put forward its goal as the defence of Georgians residing within South Ossetia contrary to vehemence and defence of its territorial integrity counter to a Russian assault, on the other hand, Moscow has set forth its objective for safeguarding its citizens counter probable violence originated by Tbilisi. Also, all of these, South Ossetian demands for further self-rule have remained in the area meanwhile the formation of Georgia’s liberation, which stands at the core of the struggle. Moscow has preserved its relationships with South Ossetians and Abkhazians aside from the Georgian state and its strategies. While Moscow has behaved similar to a benefactor, for example granting the subgroups inner visas, South Ossetians have dependent on Russia in terms of their security, comfort, and defence of human rights. The second language within South Ossetian stands Russian, non-Georgian. Their determination remains to merge with North Ossetia under the

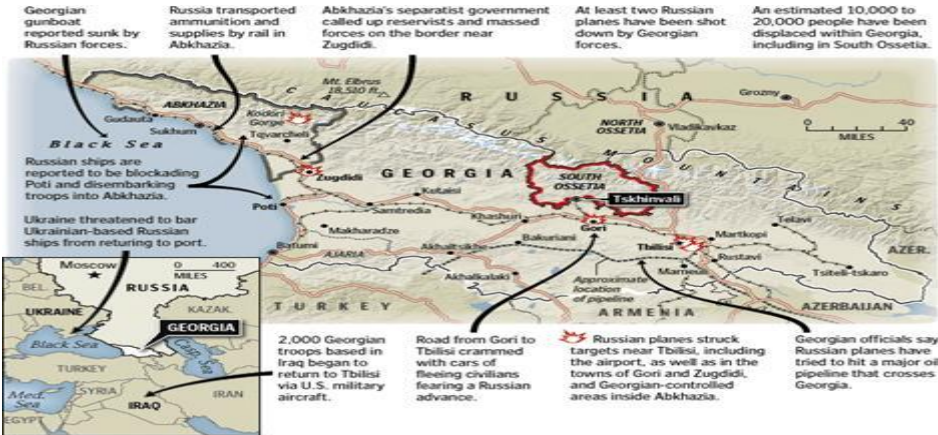
Russian statute from the Georgian liberation age onwards. Consequently, Russia characterises a desired native land for South Ossetians. The 2008 August Warfare has shown Moscow's coming back to power politics in an effort to re-establish its Great Power standing. Russia has moved toward the ethnic skirmish from a Great Power standpoint to reinstate its respect and upsurge its supervision on its earlier influence spheres. Conversely, another method assesses the warfare as a proper or ethical interference as it operates "peace enforcement" or "humanitarian intervention" addresses counter to a "massacre" or "ethnic cleansing," which stands pretty counter to the traditional Russian foreign strategy that stands further power-focussed. Moscow has benefited from the humanitarian intervention discourse and also referenced to the announcement of independence by Kosovo within February 2008, which challenged and resisted Russia's protestation nevertheless was officially accepted by the United States and European states soon. Additionally, probable forthcoming involvements of Georgia and Ukraine to NATO afterward the Bucharest Summit within April 2008, and the United States tactics to put in artilleries within Poland and Czech Republic have remained the occurrences of snowballing US impact within Russia's nearness (Aksu & Özer, 2021, pp.89-106). Furthermore, impassiveness to the Chechnya skirmish has driven the Russian arrangements. Hence, the skirmish can likewise stand appraised as a great power game amid Russia and the West, and the Russian action possibly will stay gauged as a reply to the growing Western stimulus within Eastern Europe and the Caucasus regions (Erkem & Ağkaya, 2022, pp. 57-64; Yorulmaz, 2021, pp.128-134).

In terms of the Concept of the Foreign Policy of the Russian Federation issued on 31 March 2023; the policies of Moscow towards Abkhazia and South Ossetia have been defined as "8) *comprehensively supporting the Republic of Abkhazia and the Republic of South Ossetia, promoting the voluntary choice, based on international law, of the peoples of these states in favour of a deeper integration with Russia*" (The Ministry of Foreign Affairs of the Russian Federation, 2023).

Georgia, by its 114 kilometer-border, stands Türkiye's most actual and straight terrestrial linking with Russia, Azerbaijan, and the Central Asia. Azerbaijan and Armenia-concentrated geopolitical progresses have augmented the standing of Tbilisi for Ankara in past few years. Ankara has comprehensively been supporting Tbilisi with regard to Abkhazia and South Ossetia matters. Erdoğan has mentioned that Türkiye possibly will stay a link along with a arbitrator for the settlement of these topics by underlining the occurrence of 70,000 Abkhaz residing within Abkhazia accompanied by 300,000 Abkhaz residing within Türkiye. This proposal

would be objected by Tbilisi and Türkiye would not make any pressures over Georgia. Additionally, throughout the AK Parti era (2002–), due to the standing granted to the territorial integrity of the South Caucasian nations, Ankara would offer and introduce the “Caucasian Stability and Cooperation Platform” for the peaceful resolution of local questions as well as for advancing local collaboration. But, this suggestion would be refused by Tbilisi because of the continuous Russian military existence within Georgia. Consequently, Ankara’s proactiveness for snowballing the local steadiness and collaboration has turned out to be vain on account of Russian adoption of South Ossetia and Abkhazia as autonomous nation-states (Kırsacı, 2019, pp. 336-342).

In a statement, Türkiye strongly supports Georgia's territorial integrity and doesn't recognize Abkhazia and South Ossetia's so-called independences. “As Türkiye, we believe Abkhazia and South Ossetia disputes will be solved within Georgia's internationally recognized borders and on the basis of country's territorial integrity and sovereignty. Türkiye is still supporting Georgia's NATO membership and integration to other Europe Atlantic organizations” (Erözden, 2018). For the statements of Georgia’s Foreign Ministry issued on 22 May 2022, it has been underscored that “Türkiye, as a strategic partner of our country, is a strong supporter of Georgia's territorial integrity and sovereignty. At the same time, Türkiye supports Georgia's Euro-Atlantic aspirations...” (Daily Sabah, 2022).



Available at: <http://connections-qj.org/article/how-russia-step-step-wants-regain-imperial-role-global-and-european-security-system>, (Accessed on 13 February 2024).

## Conclusion

After coming into the Power of Vladimir Putin in Russia, Moscow has been trying to establish balance between Baku and Yerevan and also trying to make both parties dependent on itself. For this aim, it has benefited from political, military and economic means. Moscow has reached its aim for launching Russian soldier into Azerbaijan via the Trilateral Declaration ending the Second Karabakh War. Within the context of Trilateral Declaration, Russia will continue to play an important role for the resolution of Nagorno-Karabakh Question in the forthcoming terms. For Türkiye, since the evolution of the problem, Türkiye has comprehensively been supporting Azerbaijan via political, Economic, military and diplomatic means. Even though Türkiye and Russia have been following different policies since the beginning of the issue, they have managed to reach consensus on the steps toward the formation and preservation of the Peace together with the II. Karabakh War. When we come to Georgia issue, Russia and Türkiye have been completely following very diverse policies. But they have can manage their relations based on SELECTIVE ENGAGEMENT STRATEGY. It can be expected that this strategy will be followed in the next years.

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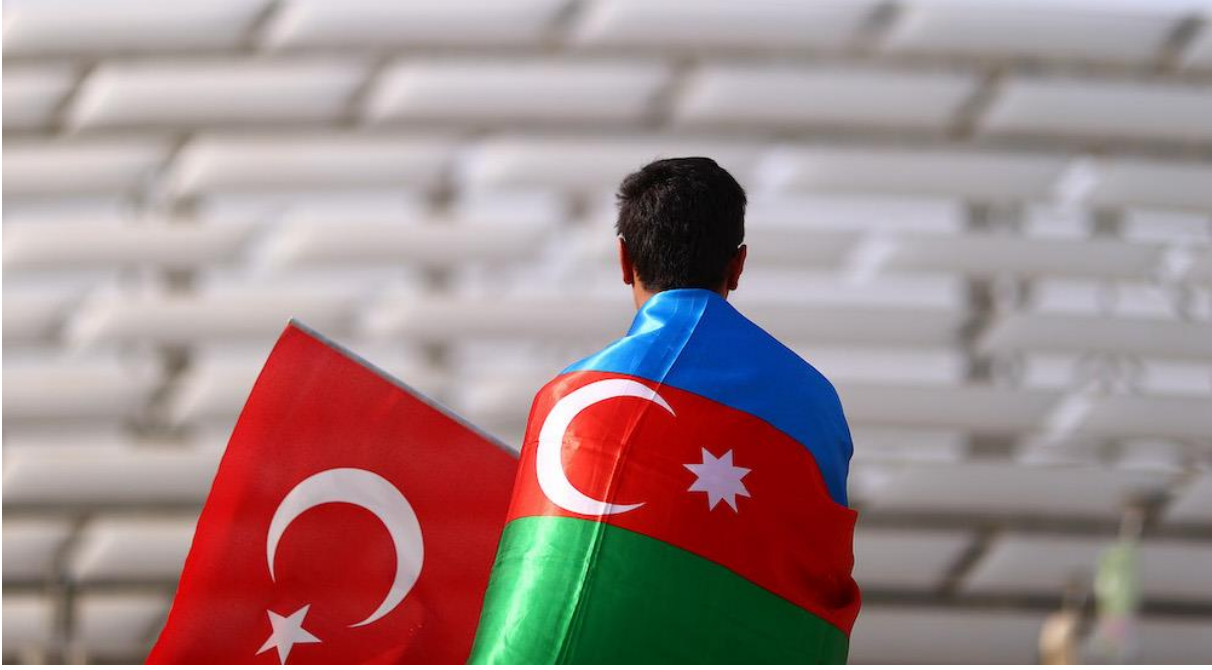
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## TURKIYE-AZERBAIJAN RELATIONS

**Prof. Dr. Giray Saynur Derman<sup>26</sup>**

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After Azerbaijan regained its independence in 1991, its diplomatic relations with Turkey were established on January 14, 1992, and today is the 32nd anniversary of the establishment of diplomatic relations.<sup>27</sup> In these 32 years, relations between the two countries were successfully managed despite short-term problems, the "One Nation Two States" understanding gave practical results with the consolidation of political, economic and military relations, and the liberation of Azerbaijani lands from occupation in the 44-day Second Karabakh War, and the relations were established on June 15. It reached the level of strategic alliance with the Shusha Declaration signed in 2021.<sup>28</sup>

Türkiye is the first country to recognize Azerbaijan, which gained its independence with the collapse of the Soviets. Relations between Türkiye and Azerbaijan are based on historical friendship and brotherhood. However, Azerbaijan's natural resources are Turkey's recent

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<sup>27</sup> Hasanov, Ali. (2013). "Sovremenniyе mejdunarodniye otnoşeniye i vneşnaya politika Azerbaydjana". Bakü: Zardabi s.812.

<sup>28</sup> Derman, Giray Saynur, Kurban, Vefa, İbrahim, Hazar, Ünalmiş Ahmet Nafız, Aslanlı, Araz Gül, Burcu, Çümen, Nur (2020), *Güney Kafkasya'nın Parlayan Yıldızı Azerbaycan (Tarihi, Siyasi Yapısı, Enerji Boyutu ve Jeopolitik Konumu ile)*, Ankara Nobel yay.,p.87.

foreign policy strategy, which has taken direct initiative in the region, has increased its importance in the region with its access to the markets. countries to become closer and act as strategic partners Caused.<sup>29</sup> As a result, trade between Azerbaijan and Türkiye an increasing trend in politics, economy, education, health, culture, tourism and other fields.cooperation has started. In fact, this cooperation has a structural impact on the Azerbaijani army. raising it to the level of NATO standards, providing support to the Turkish army assistance in international missions, a common attitude towards regional problems,joint studies in international institutions, economics and trade has reached consensus level in international projects many successful results have been achieved. This unity is reflected in Heydar Aliyev's "One Nation, Two state In a way, it has been registered with the phrase "state". Beyond the discourses of friendship, brotherhood and "One nation-two states" taking it to the level of strategic partnership and institutionalizing it is mandatory. An attempt was made to carry out a "Balance Policy" between the West, Russia and the East. The main direction of the foreign policy of the İlham Aliyev administration is Although his aim was to continue his father's foreign policy, he has recently In the face of not receiving the expected support from Western countries, They got closer than expected. In this, Russia's 2008. Western countries' promises during their intervention in Georgia in August failure to intervene effectively beyond the scope of the Karabakh conflict and Lack of support is a big factor.<sup>30</sup>

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<sup>29</sup> Derman, Giray Saynur (2013), "Etnik Çatışma Teorileri ve Kafkasya Güvenliği Bağlamında Dağlık Karabağ ve Güney Osetya Sorunu", Editör: Hasret Çomak Caner Sancaktar, *Uluslararası Güvenlik Yeni Politikalar Stratejiler ve Yaklaşımlar*, Beta Yay.,p.273.

<sup>30</sup> Alexandros Petersen, Fariz İsmailzade (Baku: Azerbaijan Diplomatic Academy, 2009), 11-14.



In addition, the excessive emotionality that dominates the relations between the two countries and adopting realistic and applicable policies instead of high expectations It is inevitable. The institutionalization of relations between the two countries is primarily aimed at establishing a common path.<sup>31</sup> It should start with creating a map. In the next stage the path Joint units should be established in accordance with the map and joint decision-making mechanism should be established. However, from time to time, the two countries over-adaptation to policies, resulting in over-influence is coming out. For this reason, the relations between the two countries, especially in foreign policy, Independent space should be left. Energy is one of the important elements of relations between countries. constitutes. Because the two countries need each other in terms of energy. Türkiye, to implement its new policy towards the region, to improve Europe's energy supply in order to fulfill its new role in ensuring the security of It needs Azerbaijan. World energy resources in Azerbaijan markets It needs the Turkish line

At this stage, the two countries common energy strategy and policy to deliver resources to the World has to develop. The complex structure and status quo in the Caucasus has become

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<sup>31</sup> Sevinç Ruinten, *Azerbaycan Türk Devletleri ile Siyasi Elageler Sisteminde Bakı* (Adiloğlu Neşriyat, 2005), 27-78

unsustainable. Producing and implementing policies aimed at becoming a regional power is important. In order for this policy to yield the desired results,<sup>32</sup>

Türkiye needs to cooperate with the countries in the region. solving security and stability problems through dialogue and peaceful means has to. The most is powerful country and promising state of the South Caucasus Azerbaijan, Turkey's increasing importance in the region and an important decision-maker It should see that it has become a global leader and take its place in the global system. The administrations of both countries use public diplomacy effectively. On the one hand, it should prevent black propaganda by using should seek support for the work through non-governmental organizations. As a result, Türkiye-Azerbaijan relations are important for the security of the Caucasus. constitutes its backbone. Therefore, education, security, economy, Cooperation in cultural and scientific fields is inevitable. Because this type of cooperation By showing its influence in the political field, it contributes positively to the development of relations.<sup>33</sup>

There is such a closeness between Azerbaijan and Turkey at the social level that it would be the envy of many states and surprise international relations experts, theorists and diplomats. Relations between the two countries have the feature of strategic alliance not only at the level of states or governments, but also at the level of societies. For this reason, relations between the two countries can also be described as a "natural alliance". The rapprochement between the administrations of the two countries is supported and even encouraged by the societies. Governments that serve the development of Azerbaijan-Turkey relations are accepted as national governments, and opposite policies are criticized. The rulers of both countries know that close relations will be supported by their people. This common perspective has also affected marriages and travels between the two countries. As a result of the social rapprochement between the two countries, visas were abolished and the parties began to travel with identification cards.

One of the most important factors that positively affects the political relations of the two countries is the relations between leaders. Particularly, the personal relations between the

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<sup>32</sup> Rayner Fraytaq-Virminqhaus, "Azerbaycan'ın harici ve Tehlikesizlik Siyaseti," AZERBAIJAN FOCUS No 1 (Temmuz-Ağustos 2009):102.

<sup>33</sup> Derman, Giray Saynur, (2020), "Dağlık Karabağ" <http://bncmedyahaber.com/haber-prof-dr-giray-saynur-derman-yazdi-daglik-karabag-6894.html>, (Erişim Tarihi 13.12.2020)

General Leader of Azerbaijan, Haydar Aliyev, and the then President of the Republic of Turkey, Süleyman Demirel, have created a tradition in the development of the relations between the two countries and still maintain their influence<sup>34</sup>. Relations between the leaders of these two countries brought Baku-Tbilisi-Ceyhan, Baku-Tbilisi-Erzurum energy lines to the relations between the two countries, created Azerbaijan-Turkey-Georgia trilateral relations, and helped to establish military relations between Azerbaijan and Turkey on solid foundations. The basis for coordination in foreign policy between the two countries was laid at that time.

At his swearing-in ceremony in 2003, when he was elected President, İlham Aliyev showed his direction in terms of the future course of relations with the words "Wherever Turkey is, Azerbaijan is there." Recep Tayyip Erdoğan-İlham Aliyev relations raised the relations between the two countries first to the level of strategic partnership and then to strategic alliance. With TANAP in the field of energy and the Baku-Tbilisi-Kars railway projects in the field of transportation, the strategic value of the two countries increased and the countries began to play an important role in Europe's energy security. With the work of these two leaders, the Council of Turkic Speaking Countries was established and later transformed into the Organization of Turkic States (TDT). Relations in the field of military and defense industry increased and Azerbaijani lands, which had been occupied for 30 years, were liberated from occupation and finally the "Shusha Declaration on Alliance" was signed.<sup>35</sup>

One of the most important reasons why the relations between the two countries are so close is that they have common interests. This situation has caused relations to reach the level of interdependence. For example, Turkey is the safest route for Azerbaijan to deliver its energy resources to Western markets. This also serves Turkey's bridging role policy. Turkey being an active power in the South Caucasus coincides with Azerbaijan's regional interests. The independent foreign policy followed by both countries recently is one of the reasons for the rapprochement in the political relations of the two countries. Their joint action in developing energy and transportation lines between East and West, establishing the "Central Corridor" in this direction, increasing the effectiveness of TDT, strengthening Georgia's sovereignty and independence, and establishing good relations with regional states such as Russia and Iran is actually due to the overlap of interests. . The realization of regional projects is the result of the practical cooperation between the two countries. The realization of the projects is the result of

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<sup>34</sup> Mahir Abdullayev, Türkiye-Azerbaycan Alakaları (Bakı: Mütercim Yayınları, 1998), 21.

<sup>35</sup> Derman, Giray Saynur, "Karabag zaferi 2020 Türk-dış-politikasının en büyük kazanımı", oldu" Anadolu Ajansı <https://www.aa.com.tr/tr/azerbaycan-cephe-hatti/karabag-zaferi-2020-turk-dis-politikasinin-en-buyuk-kazanimi-oldu/2093171>

the parties seeing the region as a cooperation zone, not a conflict zone. The parties also have future plans regarding the projects. For now, these are the construction of the İğdır-Nakhchivan natural gas pipeline and the realization of the Zangezur corridor.<sup>36</sup>

## **Economic Relations**

According to Azerbaijan Customs Directorate figures, Azerbaijan-Turkey foreign trade volume was 4 billion 181 million dollars in the first 11 months of 2021. With these figures, Türkiye ranks second after Italy in Azerbaijan's foreign trade. The reason why Italy ranks first is that oil, Azerbaijan's main foreign trade product, is sold through Italy. With these figures, Turkey-Azerbaijan trade volume is 2 times the Russia-Azerbaijan trade volume and 4 times the China-Azerbaijan trade volume. Türkiye ranks second in Azerbaijan's imports and exports. At the High Level Strategic Cooperation meeting held in Baku in February 2020, it was decided to increase the trade volume between the two countries to 15 billion dollars. For this purpose, a preferential trade agreement was signed between the parties and 30 products were determined, which the parties exempted from mutual customs duties. Since this list will be insufficient for the trade volume to reach the targeted figure, further expansion of the scope of the preferential trade list is being negotiated. Beyond this, the signing of a free trade agreement between the parties is on the agenda. In the economic section of the Shusha Declaration, it was written: "They will carry out the necessary work to establish mechanisms for the free movement of Azerbaijani-Turkish goods." The most important success of the economic relations of the two countries is mutual investments.<sup>37</sup> These mutual investments have increased rapidly in recent years and have become strategic investments for both countries. Namely, Azerbaijan's investments in Turkey were made in the energy field, and Turkey's investments in Azerbaijan were made in the non-oil field. The country in which Azerbaijan invests the most abroad is Turkey, and recently the figures have risen to 20 billion dollars. Azerbaijan's investments in Turkey are prioritized in energy projects, oil refineries, petro-chemical sector, natural gas distribution and ports. SOCAR entered the Turkish market with PETKİM in 2008 and continues its activities in this field until today. SOCAR's Star Refinery investment is strategically important because this refinery meets 25 percent of Turkey's refined oil needs. A second

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<sup>36</sup> Derman, Giray Saynur, Kurban, Vefa, İbrahim, Hazar, Ünalmiş Ahmet Nafız, Aslanlı, Araz Gül, Burcu, Çümen, Nur (2020), *Güney Kafkasya'nın Parlayan Yıldızı Azerbaycan (Tarihi, Siyasi Yapısı, Enerji Boyutu ve Jeopolitik Konumu ile)*, Ankara Nobel yay.p.67

<sup>37</sup> Azerbaijan Energy Charter Secretariat. (2013) In-Depth Review of the Energy Efficiency Policy of Azerbaijan, Baku; EIA. (2013a), Country Analysis Brief Overview: Azerbaijan,



important investment is the Trans Anatolian Pipeline project.<sup>38</sup> It is planned to export 6 billion cubic meters of natural gas to Turkey annually through this line. With the latest agreement, this figure has been increased to 8 billion cubic meters per year. When we take into account Turkey's increasing need for natural gas at a time when Europe is experiencing a natural gas crisis, TANAP has strategic importance in terms of both energy supply security and resource diversification.<sup>39</sup>



Turkish and Azerbaijani armed forces held a joint military exercise named "Mustafa Kemal Atatürk 2021" in Azerbaijan. (Azerbaijani Ministry of Defense/AA, July 3, 2021)

## **Military Relations**

Azerbaijan-Turkey military relations began with the military training agreement signed in 1992 and developed with the 1996 military training, technical and scientific agreement and the 2010 Strategic Cooperation and Mutual Assistance agreement. One of the important turning points was the Supreme Military Council established between the parties in 2007.<sup>40</sup>

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<sup>38</sup> Aras, O. N. (2008) "Karabağ Ekonomisi ve Karabağ Savaşı'nın Ekonomik Etkileri", *Karabağ Savaşı Siyasi-Hukuki-Ekonomik Analiz*, Kafkasya Araştırmaları Enstitüsü Yayınları, Yayın No:004, Bakü, ss.126-194.

<sup>39</sup> Derman, Giray Saynur, Kurban, Vefa, İbrahim, Hazar, Ünalmiş Ahmet Nafız, Aslanlı, Araz Gül, Burcu, Çümen, Nur (2020), *Güney Kafkasya'nın Parlayan Yıldızı Azerbaycan (Tarihi, Siyasi Yapısı, Enerji Boyutu ve Jeopolitik Konumu ile)*, Ankara Nobel yay.,p.57

<sup>40</sup> Derman, Giray Saynur, "Karabag zaferi 2020 Türk-dış-politikasının en büyük kazanımı oldu" Anadolu Ajansı <https://www.aa.com.tr/tr/azerbaycan-cephe-hatti/karabag-zaferi-2020-turk-dis-politikasinin-en-buyuk-kazanimi-oldu/2093171>

What followed was increased cooperation in the field of defense industry and the Azerbaijani army's transition to the Turkish army model starting from 2020.<sup>41</sup> As early as April 2016, the success of soldiers who received military training in Turkey started discussions about the Turkish army model in Azerbaijan. The successes of the Turkish army in Syria and Libya were also carefully watched in Azerbaijan. In August 2020, Azerbaijani President İlham Aliyev, in a meeting with Turkish Defense Minister Hulusi Akar, said that the Azerbaijani army will switch to the Turkish army model.<sup>42</sup> The military success of special units that received military training in Turkey and were established according to the Turkish army model in the Second Karabakh War accelerated this process.<sup>43</sup> In the declaration about the Alliance signed in Shusha on June 15, 2021, it was emphasized that "the two brother countries will work together to create and modernize the armed forces in accordance with modern demands." In August 2021, within the framework of YAŞ decisions, four generals were appointed from Turkey to Azerbaijan to accelerate and realize this process. The establishment of Azerbaijani Commando units in Hadrut, which has strategic importance for Azerbaijan, was noteworthy. The cooperation, which started in the 2000s in the field of defense industry of the two countries, continued at an accelerated pace before and after the Second Karabakh War.<sup>44</sup> Before the war, Azerbaijan imported Bayraktar TB2s from Turkey, and TB2s played a very important role in the victorious end of the Karabakh War. President Aliyev said that imports of Turkish defense industry products to Azerbaijan will increase, and in 2021, Azerbaijan imported more than 202 million dollars of defense industry products from Turkey, becoming the second country after the USA. It is thought that this cooperation will increase further in the future as Turkey nationalizes aircraft, tank and helicopter production.

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<sup>41</sup> Derman, Giray Saynur, Kurban, Vefa, İbrahim, Hazar, Ünalmiş Ahmet Nafız, Aslanlı, Araz Gül, Burcu, Çümen, Nur (2020), *Güney Kafkasya'nın Parlayan Yıldızı Azerbaycan (Tarihi, Siyasi Yapısı, Enerji Boyutu ve Jeopolitik Konumu ile)*, Ankara Nobel yay.89.

<sup>42</sup> Derman, Giray Saynur, "Karabag zaferi 2020 Türk-dış-politikasının en büyük kazanımı oldu" Anadolu Ajansı <https://www.aa.com.tr/tr/azerbaycan-cephe-hatti/karabag-zaferi-2020-turk-dis-politikasinin-en-buyuk-kazanimi-oldu/2093171>

<sup>43</sup> Derman, Giray Saynur, (2020), "Dağlık Karabağ" <http://bncmedyahaber.com/haber-prof-dr-giray-saynur-derman-yazdi-daglik-karabag-6894.html>, (Erişim Tarihi 13.12.2020)

<sup>44</sup> Pritçin S. (2010), "Novaya gazovaya strategiya Azerbaydjana, ot Mayendorfa do Astanı: prinsipalniye aspekti armano-azerbaydjanskogo nagornogo-karabaxskogo konflikta: sb.st./ pod red. G. Alekseyeva.M

## Conclusion

On the 32<sup>nd</sup> anniversary of diplomatic relations, Azerbaijan and Turkey have achieved successes that will be the envy of third parties in many fields, from diplomacy to economy, from military to energy and transportation. The parties have important road maps for the development of bilateral relations in the future. The most important of these is the "Shusha Declaration on Allyship" signed in Shusha, liberated from occupation, on June 15, 2021, which President Recep Tayyip Erdoğan described as "our road map". The Shusha Declaration outlines the future of relations in the fields of security, military, economic, energy and transport. Sub-institutions of states are working to improve relations in these areas.



One of the most important achievements of Turkey-Azerbaijan diplomatic relations is the liberation of Azerbaijani lands, which have been occupied for 30 years, from Armenian occupation. The end of this occupation is a diplomatic success as well as a military one. Because in this war, the diplomatic theses of Azerbaijan and Turkey also won victory. Azerbaijan-Turkey diplomatic cooperation not only ended the occupation in Karabakh, but also showed Armenia that it would have no future without normalization with Turkey and Azerbaijan, and that there would be no stability and cooperation in the region until the occupation ended and despite Azerbaijan and Turkey. The liberation of Azerbaijani lands from occupation created new opportunities for the regional policies of Azerbaijan and Turkey. Azerbaijan and Türkiye are establishing stability and cooperation plans for the region. The realization of the regional

platform, the normalization of Azerbaijan-Armenia-Turkey relations, the opening of the Zangezur corridor and the creation of a cooperation platform in which all regional states participate constitute the essence of the regional policies of the two countries. The Organization of Turkish States (TDT), where the two countries are the driving force, is an important structure that will affect the future of regional relations. The Kazakhstan incident was a test for TDT and TDT should be prepared for such incidents in the future. Azerbaijan and Turkey have great responsibilities in this regard.

This new conjuncture that emerged with the Turkey-Azerbaijan partnership will strengthen the unity among the Turkish states, and the motto of the great Crimean Turk Scholar Ismail Gaspirali, "*Unity in Language, Ideas and Work*", will be a guide for unity in all areas of work in the Turkish World.

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# INVESTIGATING TECHNO-ECONOMIC FEASIBILITY OF PHOTOVOLTAIC SOLAR POWER SYSTEMS WITH VARIOUS CAPACITIES AND SUN-TRACKING SYSTEMS IN CYPRUS

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## Abstract

Assessing a country's solar and wind energy potential is indeed crucial, especially in the context of reducing dependence on fossil fuels and achieving the Sustainable Development Goals. Therefore, the study reviewed previous scientific studies associated with wind and energy potential in Cyprus. The results demonstrated that Cyprus has huge solar energy compared to wind energy due to the high value of solar radiation. Besides 18% of the island (1660.63 km<sup>2</sup>) is suitable for solar energy, while only 1% (76.57 km<sup>2</sup>) is suitable for wind energy due to high solar radiation levels according to Tawalbeh (2022). According to this review, this paper aims to evaluate the techno-economic feasibility of photovoltaic solar power systems with various capacities and sun-tracking systems in different locations in Cyprus. The analysis indicates that implementing these systems is economically viable, as they yield favorable economic outcomes. This underscores the potential for Cyprus to harness solar energy effectively to meet its energy needs and achieve its sustainability goals.

**Keywords:** Solar energy, Cyprus, RETScreen software, Sustainable Development Goals, techno-economic feasibility

## 1. Introduction

Energy is an essential catalyst for promoting economic growth and facilitating industrialization (Fang et al. 2022). The global energy supply chain, which relies primarily on fossil fuels, plays an indispensable role in meeting the world's energy needs (Aslanturk 2020). Therefore, renewable energy can be considered as an alternative solution to the energy crisis due to the limited fossil fuel reserves and their environmental harm (Chien et al., 2021). Renewable sources such as wind and solar energy are rapidly developing and becoming more economically competitive (Potrč et al., 2021). Wind and solar energy, a promising alternative, holds vast global potential and is poised to transform the energy landscape, offering abundant and sustainable power for the future (Elmahmoudi et al., 2020; Kassem et al., 2022). Wind and solar energy's first advantage is its global availability (Weschenfelder et al., 2020). The second advantage is the high energy output achievable with commercial wind turbines, now reaching multi-megawatt capacities (Kassem et al., 2023).

Currently, Cyprus relies heavily on fossil fuels to generate electricity. Switching to renewable energy sources such as wind and solar could significantly reduce this dependence while providing a cleaner alternative. Solar irradiation levels range from 4.80–5.44 kWh/m<sup>2</sup>/day for global horizontal irradiation (GHI) and 4.89–6.15 kWh/m<sup>2</sup>/day for direct normal irradiation (DNI), according to the solar atlas map. Similarly, according to the wind atlas map, wind power density falls between 106 and 985 W/m<sup>2</sup> at a height of 100m, with the highest values recorded in the Kyrenia region. Various studies have explored the potential of wind and solar energy throughout Cyprus (Jacovides et al. 2002; Koroneos et al. 2005; Poullikkas 2009; Makrides et al. 2009; Solyali and Redfern 2010; Alexopoulos and Hoffschmidt 2010; Abbasoglu 2011; Yenen et al. 2012; Ibrahim and Altunc 2012; Kalogirou 2013; Pathirana and Muhtaroglu 2013; Radmehr et al. 2014; Kastanas et al. 2014; Agboola and Egelioglu 2014; Okoye and Atikol 2014; Maltini and Minder 2015; Ozerdem et al. 2015; Kamali 2016; Dagbasi et al. 2016; Cabacaba and Abbasoğlu 2017; Kassem et al. 2017; Kassem et al. 2018; Kassem et al. 2018; Tsangas et al. 2018; Groppi et al. 2018; Kassem and Gökçekuş 2018, Alayat et al. 2018; Ouria and Sevinc 2018; Al-Ghussain et al. 2018; Hastunç, and Tekbıyık-Ersoy 2018; Kassem et al. 2019; Ogbeba and Hoskara 2019; Kassem et al. 2019; Gökçekuş et al. 2019a; Gökçekuş et al. 2019b; Oner 2019; Al-Ghussain and Taylan 2019; Kassem et al. 2020; Kassem et al. 2020; Al-Turjman et al. 2020; Kassem et al. 2021; Kassem et al. 2021; Tawalbeh 2022; Kassem et al., 2023). The results showed the important role that renewable energy, especially solar energy, is expected to play in Cyprus' energy, especially for future electricity generation.



Consequently, this study aims to analyze the design and economic aspects of grid-connected PV systems, including different capacities and sun-tracking systems. To achieve this goal, the researchers used RETScreen software to evaluate the technical and economic feasibility of these PV systems. RETScreen software enabled them to evaluate various factors such as system capacity, sun-tracking functionality, and economic feasibility. By conducting this analysis, the study aims to provide insights into the practicality and financial feasibility of implementing grid-connected PV systems with different specifications, thus informing decision-making processes regarding renewable energy investments.

## 2. Material and methods

### 2.1 Study area

Cyprus is located in the eastern Mediterranean Sea and has an area of 9,251 km<sup>2</sup>, of which 1,733 km<sup>2</sup> is covered with forests. It is characterized by a typical Mediterranean climate, characterized by distinct seasons and noticeable temperature changes. The summer, which lasts from mid-May to mid-September, is hot and dry, while the winter, from early November to mid-March, is rainy and unstable. Spring and autumn serve as transitional periods. Moreover, the island experiences high temperatures during the summer and clear skies due to air masses coming from Central Asia. On the other hand, the winter season witnesses the passage of air depressions across the Mediterranean Sea, leading to increased precipitation. Table 1 provides details of the selected sites across Cyprus.

**Table 1.** Information regarding the selected stations

<b>Locations</b>	<b>Latitude [N°]</b>	<b>Longitude [E°]</b>	<b>Elevation [m]</b>	<b>Locations</b>	<b>Latitude [N°]</b>	<b>Longitude [E°]</b>	<b>Elevation [m]</b>
Dipkarpaz	35.60	34.38	170	Morphou	35.20	33.01	48
Famagusta	35.12	33.92	11	Neo chorio	35.03	32.37	144
Gecitkale	35.30	33.69	76	Nicosia	35.17	33.37	139
Kyrenia	35.33	33.32	23	Pano Platres	34.89	32.86	1164
Larnaca	34.92	33.62	13	Paphos	34.77	32.42	33
Lefke	35.14	32.84	13	Trikomo	35.29	33.90	25
Limassol	34.69	33.04	38	Vadili	35.14	33.65	52

### 2.2 Dataset

The study relies on satellite meteorological data, particularly from the National Aeronautics and Space Administration (NASA) database, to assess the potential of wind and solar energy. This database offers global weather data with a resolution of 1° latitude and longitude, making it a valuable resource for renewable energy studies. Numerous researchers

have utilized this dataset to evaluate solar and wind energy potential worldwide (Kassem et al., 2020; Kassem et al., 2021; Kassem et al., 2021; Kassem and Abdalla 2022; Kassem et al., 2023; Kassem et al., 2023; Çamur et al., 2021). Therefore, monthly data from the NASA dataset are utilized to assess solar energy potential in selected locations in Cyprus.

### 2.3 RETScreen software

RETScreen is a comprehensive software tool designed to evaluate the feasibility, performance, and financial viability of renewable energy and energy efficiency projects. It was developed by Natural Resources Canada. RETScreen provides users with a wide range of functions to evaluate different aspects of renewable energy systems, including solar, wind, hydro, biomass, and geothermal, as well as energy efficiency measures. RETScreen software has frequently been utilized to assess the feasibility of photovoltaic (PV) power plants in various studies (Akusta and Cergibozan 2022; Luqman et al., 2023; Zaro and Ayyash 2023). RETScreen software is utilized to estimate the capacity factor, annual power production, and greenhouse gas (GHG) reductions, and conduct economic assessments.

*Capacity factor (CF)*

$$CF = \frac{P_{out}}{P \times 8760} \quad (1)$$

*Annual GHG emission reduction (A-GHG)*

$$A - GHG = [(Base\ case\ GHG\ emission\ factor) - (Proposed\ case\ GHG\ emission\ factor)] \times End\ use\ energy\ delivered \quad (2)$$

*GHG emission reduction cost (GHG-E-RC)*

$$GHG - E - RC = \frac{ALCS}{\Delta_{GHG}} \quad (3)$$

*Net present value (NPV)*

$$NPV = \sum_{n=0}^N \frac{C_n}{(1+r)^n} \quad (4)$$

*Levelized cost of energy (LCOE)*

$$LCOE = \frac{\text{sum of cost over lifetime}}{\text{s of electricity generated over the lifetime}} \quad (5)$$

*Simple payback (SP)*

$$SP = \frac{C - IG}{(C_{ener} + C_{capa} + C_{RE} + C_{GHG}) - (C_{o\&M} + C_{fuel})} \quad (6)$$

*Equity payback (EP)*

$$EP = \sum_{n=0}^N C_n \quad (7)$$

Annual life cycle savings (ALCS)

$$ALCS = \frac{NPV}{\frac{1}{r} \left( 1 - \frac{1}{(1+r)^N} \right)} \quad (8)$$

Benefit-cost ratio (B-C)

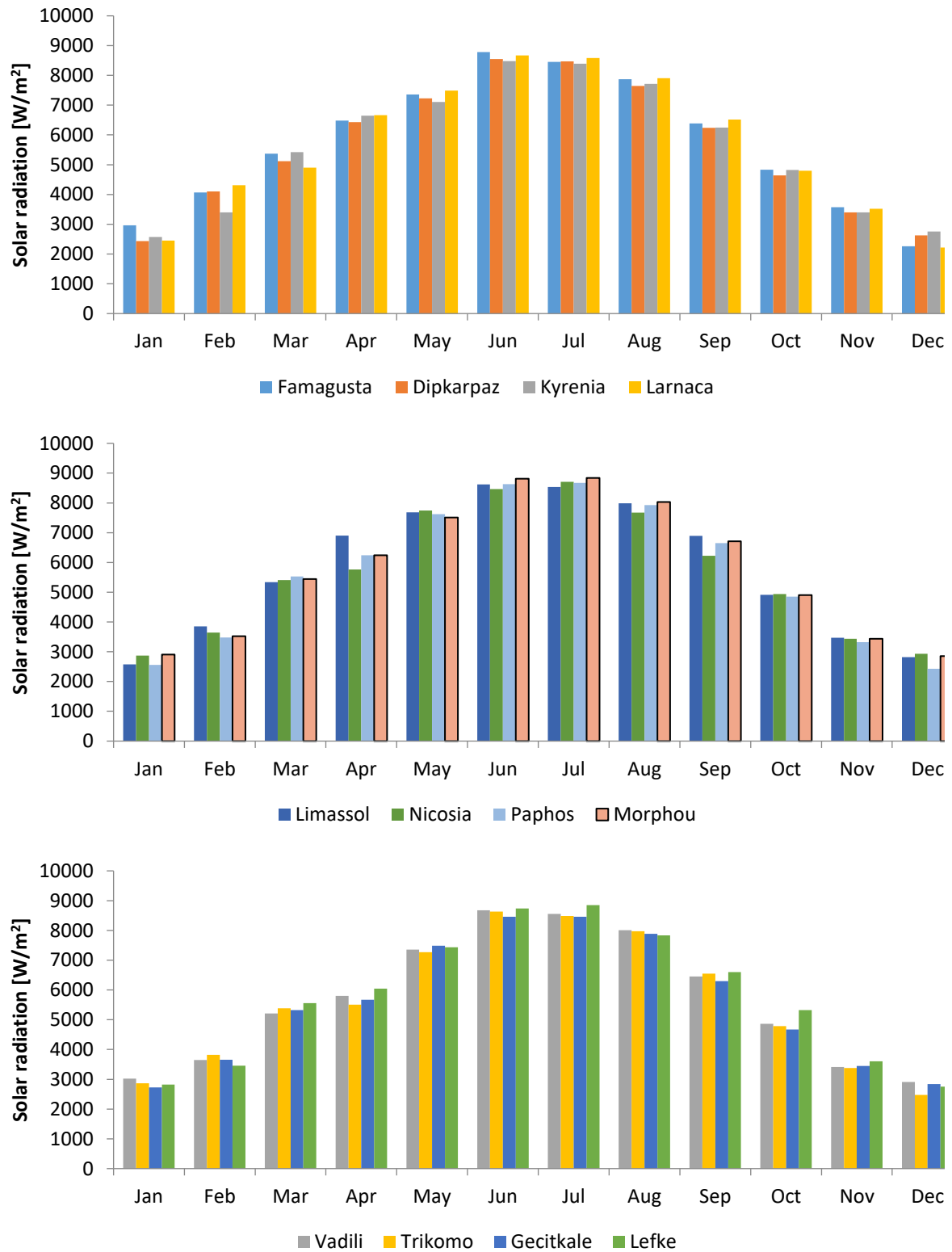
$$B - C = \frac{NPV + (1 - f_d)C}{(1 - f_d)C} \quad (9)$$

where  $P_{out}$  is energy generated per year,  $P$  is installed capacity,  $N$  is the project life in years,  $C_n$  is the after-tax cash flow in year  $n$ ,  $r$  is the discount rate.  $C$  is the total initial cost of the project,  $f_d$  is the debt ratio,  $B$  is the total benefit of the project,  $IG$  is the incentives and grants,  $C_{ener}$  is the annual energy savings or income.  $C_{capa}$  is the annual capacity savings or income,  $C_{RE}$  is the annual renewable energy (RE) production credit income,  $C_{GHG}$  is the GHG reduction income,  $C_{o\&M}$  is the yearly operation and maintenance costs incurred by the clean energy project.  $C_{fuel}$  is the annual cost of fuel, which is zero for renewable projects, and  $\Delta_{GHG}$  is the annual GHG emission reduction.

### 3. Results and discussion

#### 3.1 Characteristics of solar energy

This section analyzes data from NASA to assess power generation potential for flat-panel PV, solar energy concentration, and concentrating photovoltaic systems. GHI and DNI, crucial parameters for solar resource analysis, are examined based on studies by Kebede et al. (2015), Práválie et al. (2019), and Awan et al. (2021). Monthly GHI and DNI values for selected locations range from 2219.68-8908.38 kWh/m<sup>2</sup> and 2801.96-9709.80 kWh/m<sup>2</sup>, respectively, as depicted in Figures 1 and 2. Annual GHI and DNI values, listed in Table 2, vary between 1588.43-1670.35 kWh/m<sup>2</sup> and 1725.51-1907.07 kWh/m<sup>2</sup>, respectively. Limassol and Pano Platres exhibit the highest and lowest annual GHI values, while Limassol and Neo Chorio show the highest and lowest annual DNI values. Solar resources at these locations are categorized as fair, good, and excellent, indicating suitability for large or small-scale PV and CSP systems, as highlighted by Práválie et al. (2019) and Kassem et al. (2021). Thus, all selected areas are deemed suitable for installing PV/flat panels and CSP systems.



**Figure 1.** Monthly average GHI values for all selected locations

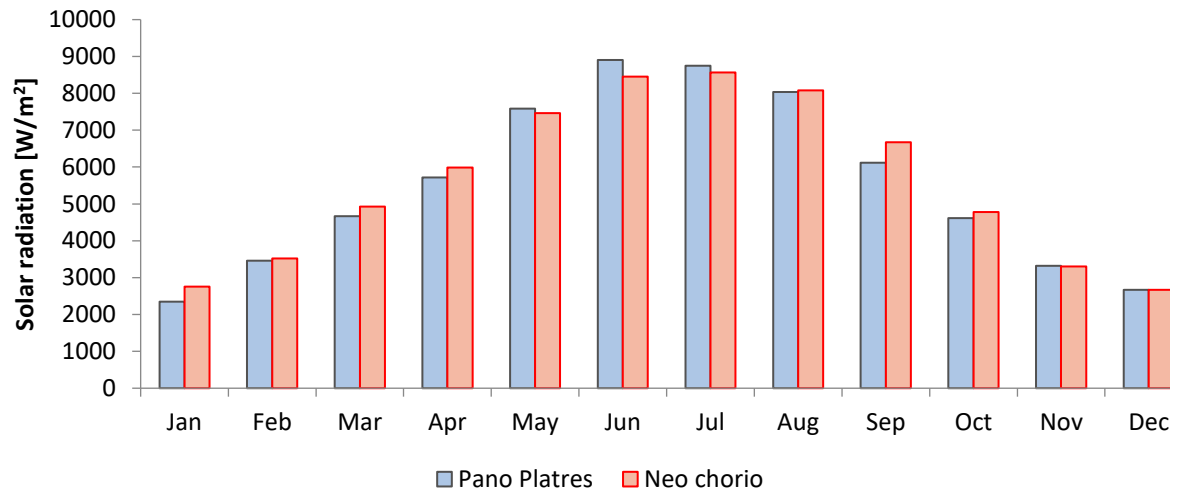
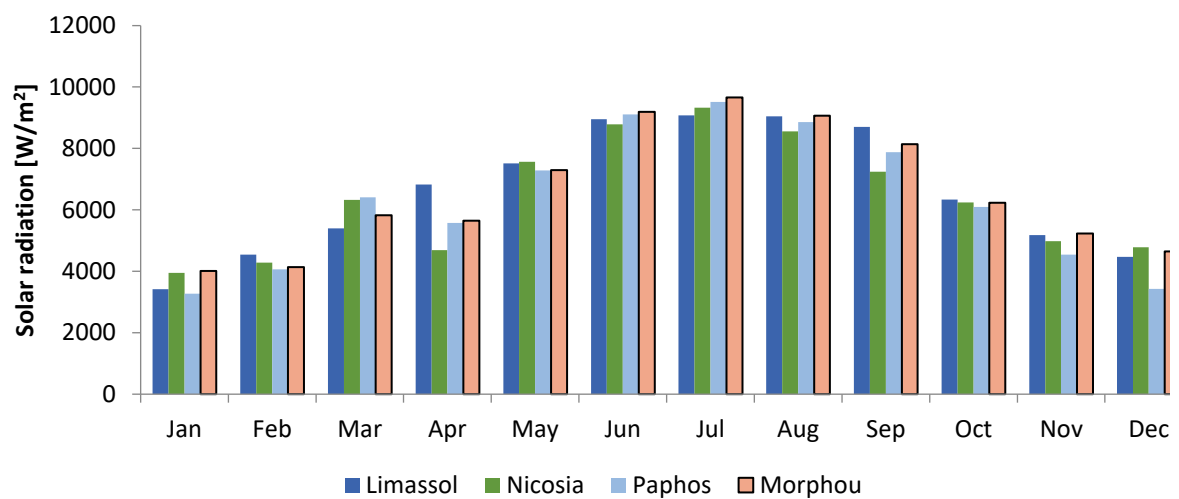
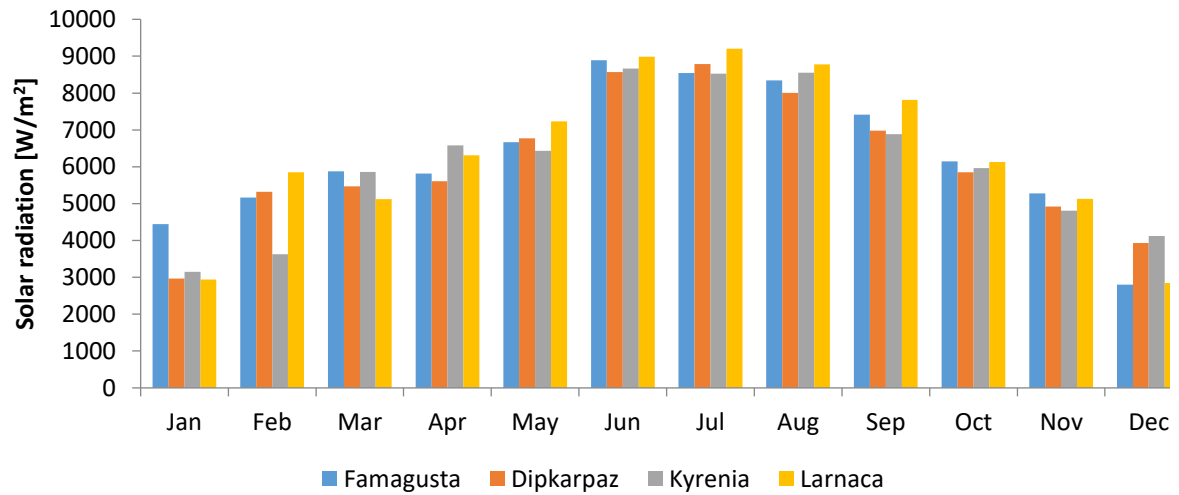
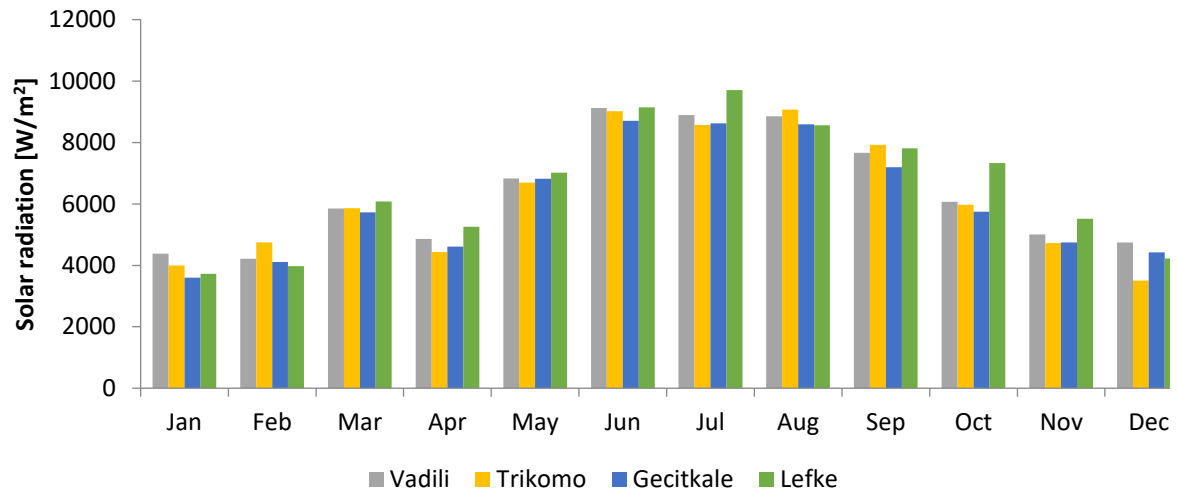
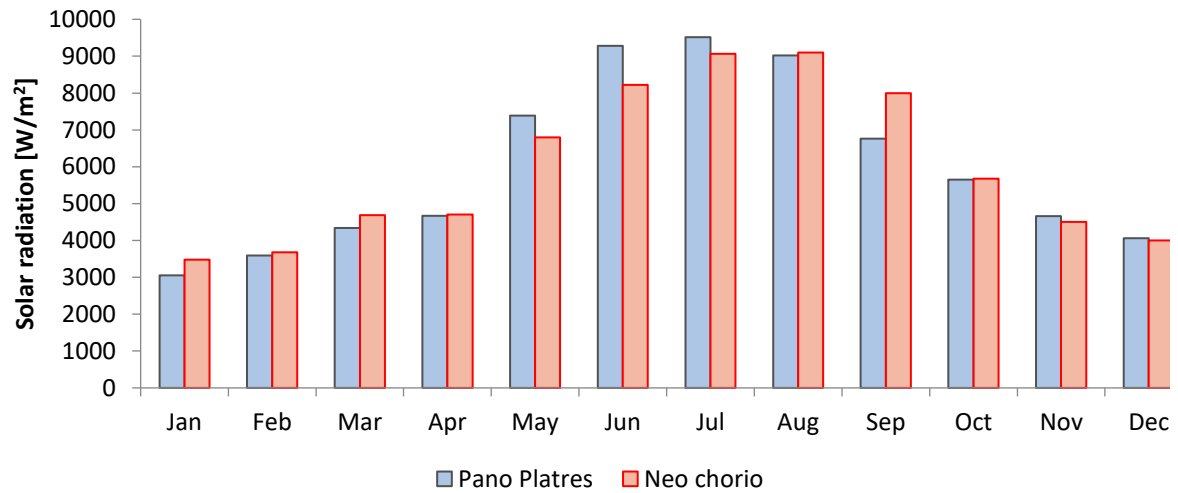


Figure 1. Continued





**Figure 2.** Monthly average DNI values for all selected locations



**Figure 2.** Continued

**Table 2.** Annual GHI and DNNI values and solar energy classification for all locations

Location	Annual GHI [kWh/m <sup>2</sup> ]	Class	Annual DNI [kWh/m <sup>2</sup> ]	Class
Famagusta	1641.33	3 (fair)	1808.87	4 (good)
Dipkarpaz	1605.04	3 (fair)	1756.18	4 (good)
Kyrenia	1606.96	3 (fair)	1755.84	4 (good)
Larnaca	1632.65	3 (fair)	1832.17	4 (good)
Limassol	1670.35	4 (good)	1907.07	5 (excellent)
Nicosia	1627.84	3 (fair)	1841.34	4 (good)
Paphos	1629.90	3 (fair)	1824.64	4 (good)
Morphou	1660.52	3 (fair)	1898.05	5 (excellent)

Vadili	1629.81	3 (fair)	1835.37	4 (good)
Trikomo	1610.84	3 (fair)	1788.57	4 (good)
Gecitkale	1606.28	3 (fair)	1749.71	4 (good)
Lefke	1656.18	4 (good)	1879.89	5 (excellent)
Pano Platres	1588.43	3 (fair)	1727.93	4 (good)
Neo chorio	1612.09	3 (fair)	1725.51	4 (good)

*Based on the value of GHI*

class 3 (fair): 1419.7-1641.8 kWh/m<sup>2</sup>

class 4 (good): 1641.8-1843.8 kWh/m<sup>2</sup>

*Based on the value of DNI*

class 4 (good): 1546.8-1840.9 kWh/m<sup>2</sup>

class 5 (excellent): 1840.9-2149.9 kWh/m<sup>2</sup>

### 3.2 Solar Power System Performance

The present study explored the technical and economic feasibility of grid-connected PV systems of different capacities (5 kW, 20 kW, and 100 kW) in Cyprus. The optimal orientation angles (inclination and azimuth angle) for fixed PV systems were determined using a PV Geographic Information System (PVGIS) simulation tool (see Table 3). Based on the previous study (Lazaroiu et al. 2015), single-axis and two-axis tracking systems can increase power output by up to 20% and 40%, respectively, compared to fixed tilt systems. Moreover, two-axis tracking systems outperform both single-axis and fixed-tilt tracking systems in power output (Mohammadi et al. 2018). Hence, the study evaluated the feasibility of a 5 kW grid-connected PV system with variable sun-tracking systems to utilize it as a power source for residential applications.

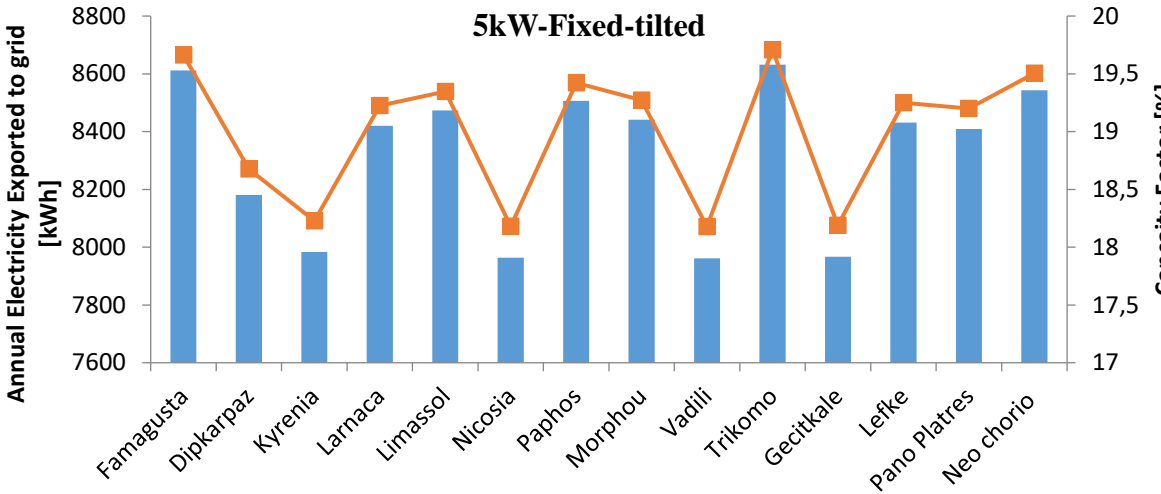
**Table 3.** Orientation angles for fixed-tilt PV system for all locations

Location	Slope angle [°]	Azimuth angle [°]	Location	Slope angle [°]	Azimuth angle [°]
Famagusta	31	3	Vadili	31	2
Dipkarpaz	31	5	Trikomo	31	2
Kyrenia	30	-1	Gecitkale	32	-2
Larnaca	31	2	Lefke	30	-1
Nicosia	31	-2	Pano Platres	30	-4
Limassol	31	5	Neo chorio	30	2
Nicosia	31	-2			
Paphos	31	5			

Morphou	31	2
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### 3.2.1 Electricity generation and capacity factor

Figure 3 displays the annual electricity generation (EG) and capacity factor (CF) of the proposed PV systems. EG ranges from 7961.51–8631.22 kWh for 5kW fixed-tilt systems, 10839.81–11939.71 kWh for 5kW two-axis systems, 31846.33–34524.89 kWh for 20kW fixed-tilt systems, and 159231.63–172624.47 kWh for 100kW systems. Trikomo records the highest EG, while Vadili has the lowest across all systems. CF varies from 18.18% to 19.71% for fixed-tilt systems and 24.45% to 27.26% for two-axis systems. Other studies support these findings; Imam and Al-Turki (2019) reported a CF of 22% for a 12.25 kW PV system, while Kebede (2015) found 19.8% for 5 MW PV plants. The CF for a 1.4 kW rooftop PV system was 21.7 (Kazem et al., 2014), and for 5 MW PV plants with sun-tracking, it ranged from 17.54% to 27.42% (Mohammadi et al., 2018). These results affirm the technical sustainability of installing PV systems in Cyprus.





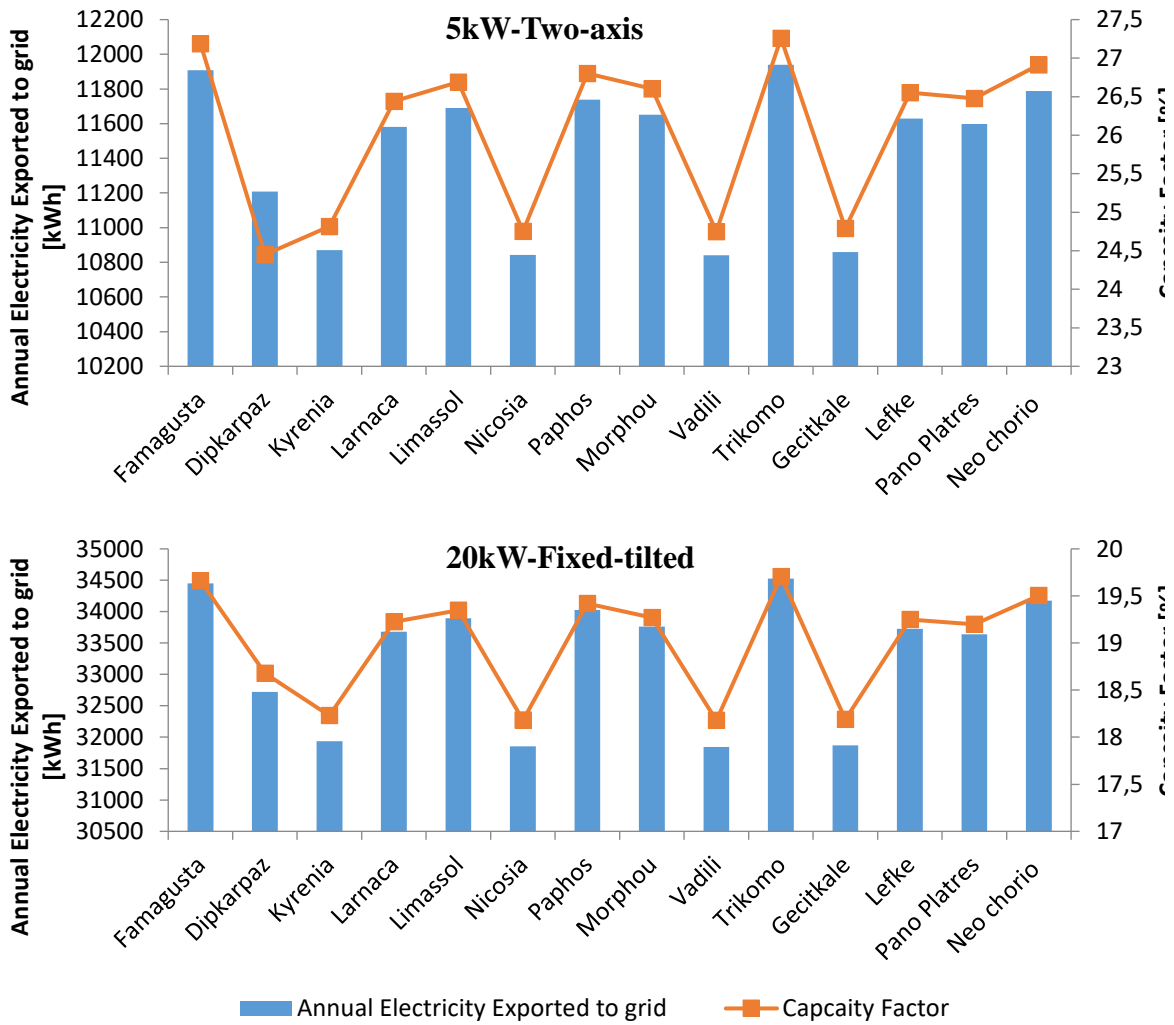
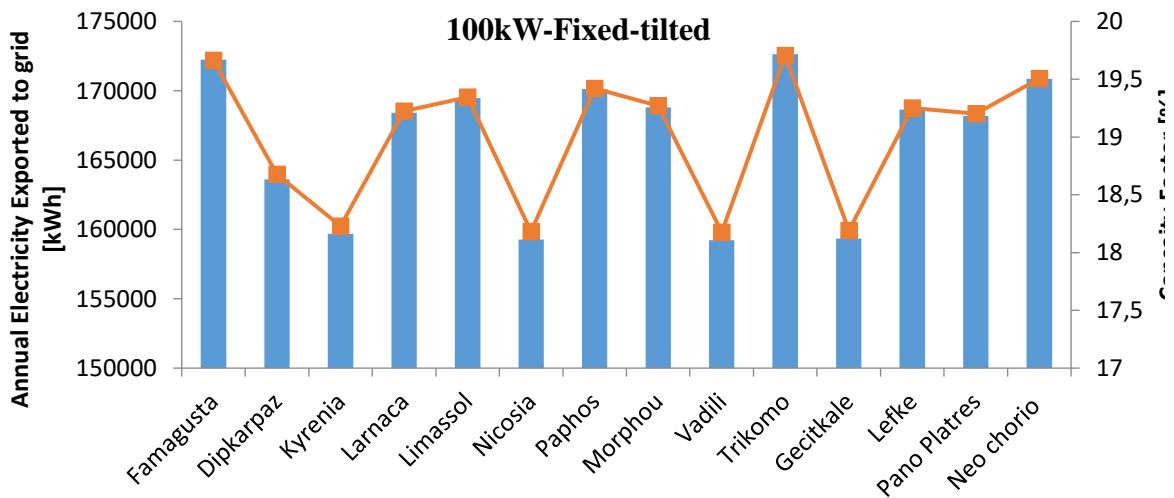
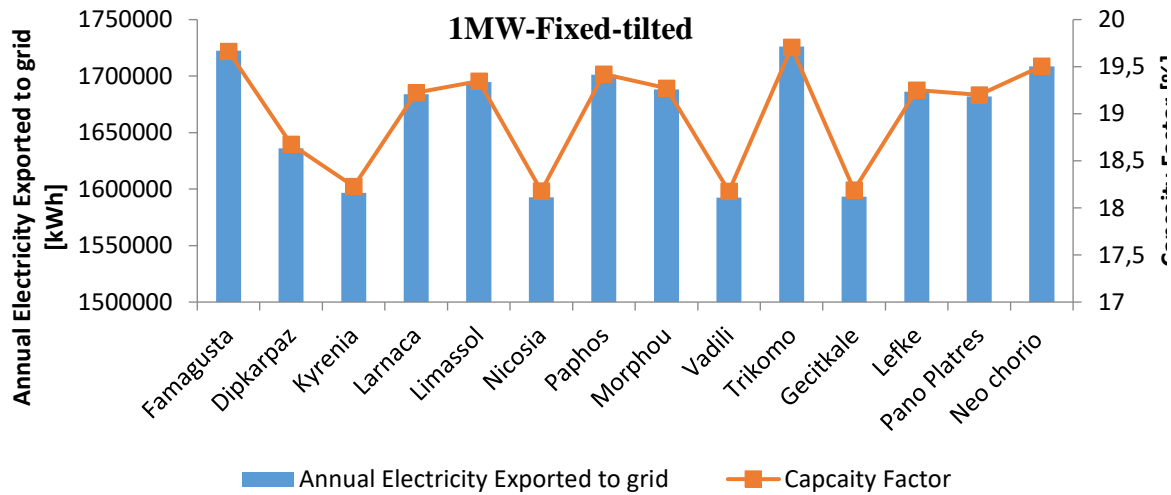


Figure 3. Annual EC and CF for the proposed PV systems





**Figure 3.** Continued

### 3.2.2 Performance of the proposed systems

The study evaluates proposed PV systems based on economic and environmental factors. Financial parameters, drawn from previous studies, and system costs estimated from recent market data, underpin the analysis (see Table 4). Figures 4-7 depict key economic performance indicators of the PV systems. Positive net present value (NPV) values signify financial feasibility, corroborated by acceptable internal rates of return (Mohammadi et al. 2018; Owolabi et al. 2019). Vadili exhibits the longest energy payback period (EP) across various system configurations, while Trikomo records the lowest EP, followed by Famagusta. Trikomo also shows the highest benefit-cost (B-C) ratio, indicating project profitability, followed by Famagusta. The lowest Levelized cost of electricity (LCOE) is observed in Trikomo for certain system configurations. The study underscores the economic viability of 5kW with sun-tracking, 20kW, and 100kW PV power systems across regions. The benefit-cost ratio, a key metric for project viability, is above one for all systems, indicating profitability. Additionally, the study employs an Emission Analysis Worksheet to estimate greenhouse gas (GHG) emissions reduction, with Trikomo showing the highest reduction followed by Famagusta, and Vadili exhibiting the least reduction. Overall, the analysis provides valuable insights into the economic feasibility and environmental benefits of the proposed PV systems, emphasizing their potential as sustainable energy solutions across diverse geographical locations.

**Table 4.** Economic and financial parameters used for analysis

<b>Parameter</b>	<b>Unit</b>	<b>Value</b>
PV module cost	\$	57.8 (CSM340-120)
Number of modules	-	15 for 5kW 59 for 20kW 294 for 100kW 2941 for 1MW
The lifetime of the PV module	Year	25
The cost of each unit of inverter	\$	550 for 5kW 2000 for 20kW 10000 for 100kW 149252.47 for 1MW
Miscellaneous/contingency fund	% of the total initial cost	3
Installation and spare parts	% of the total initial cost	8.6
O&M cost	Annual	1.5 c\$/kWh
Lifetime of inverter	Year	10
Feasibility study, development, and engineering cost	% of the total initial cost	0.6
Inverter replacement periodic cost	Every thirteen years	Equal to the inverter's cost
Inflation rate	%	2
Discount rate	%	3
Project life	Year	25
Energy cost increase rate	%	5
Reinvestment rate	%	9
Debt ratio	%	50
Debt interest rate	%	7
Debt term	Year	20

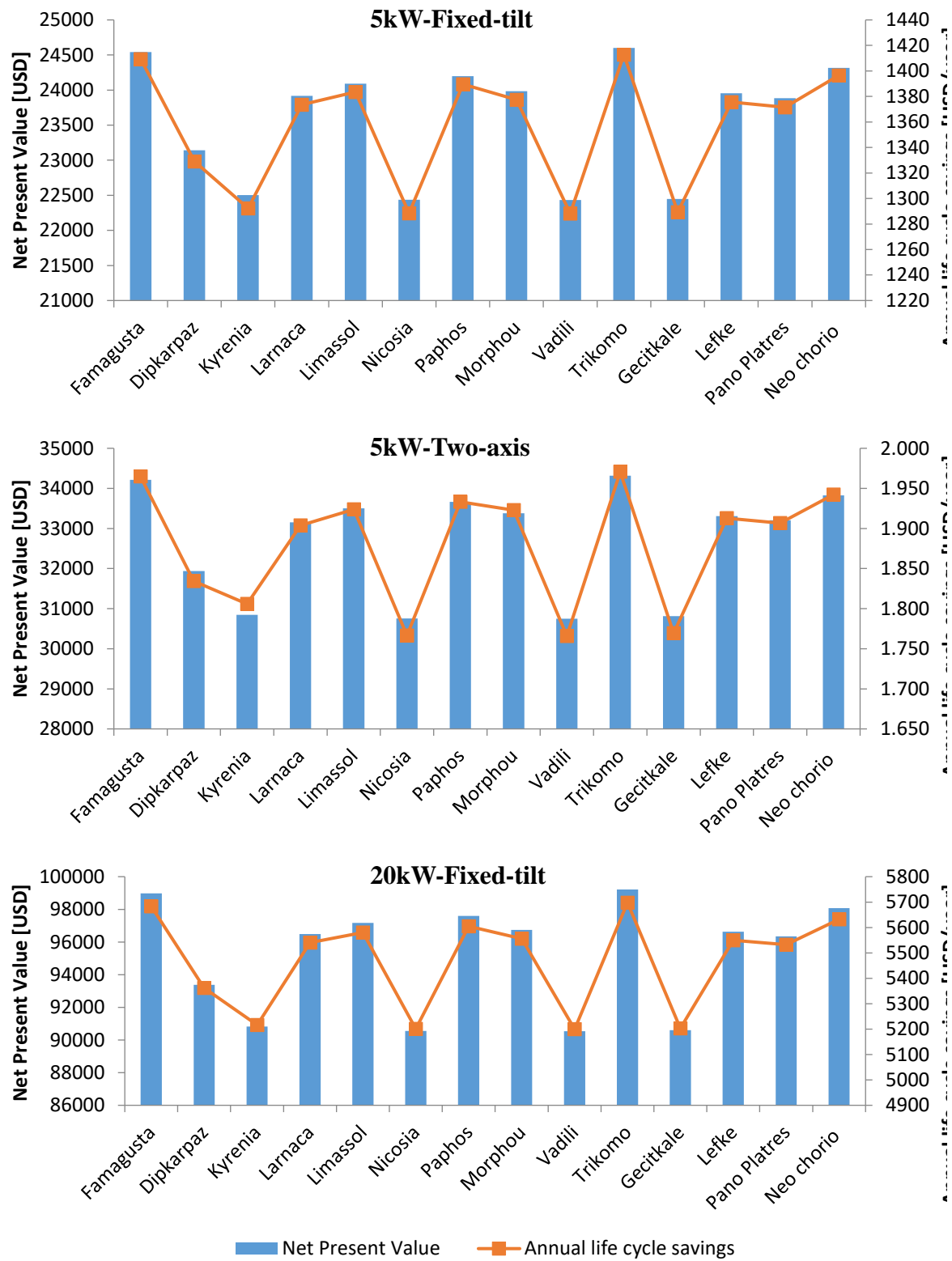


Figure 4. Net present value and annual life cycle saving for the developed systems

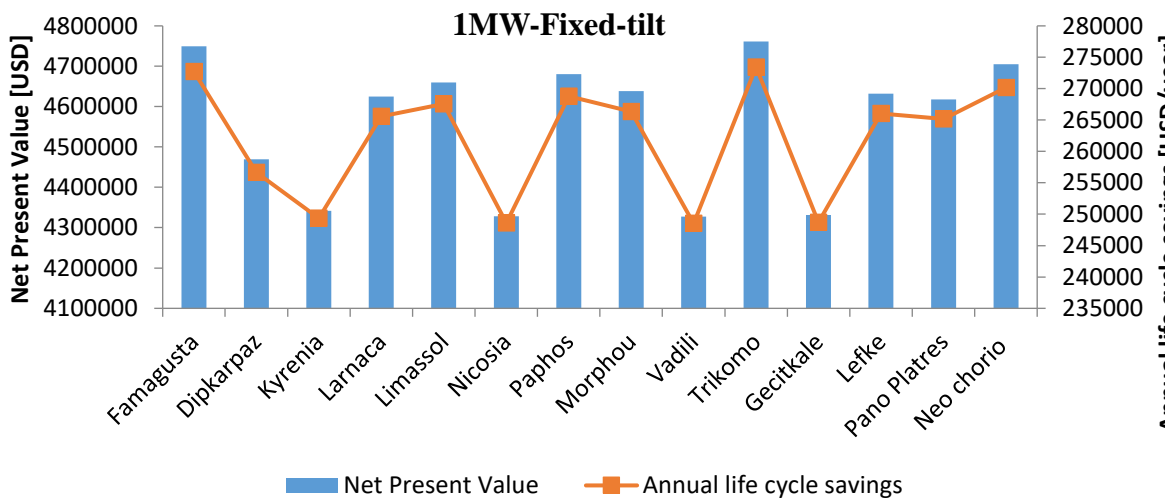
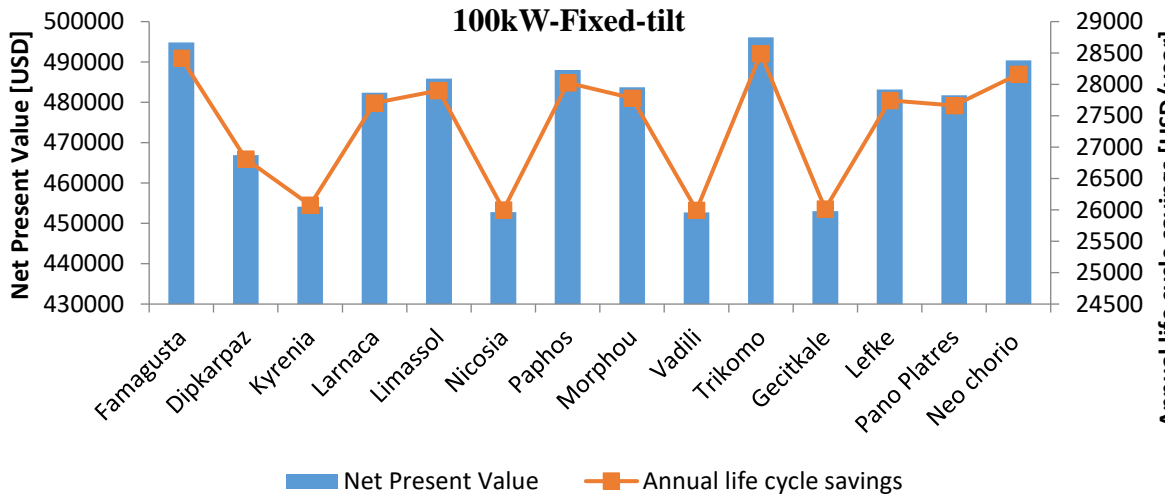
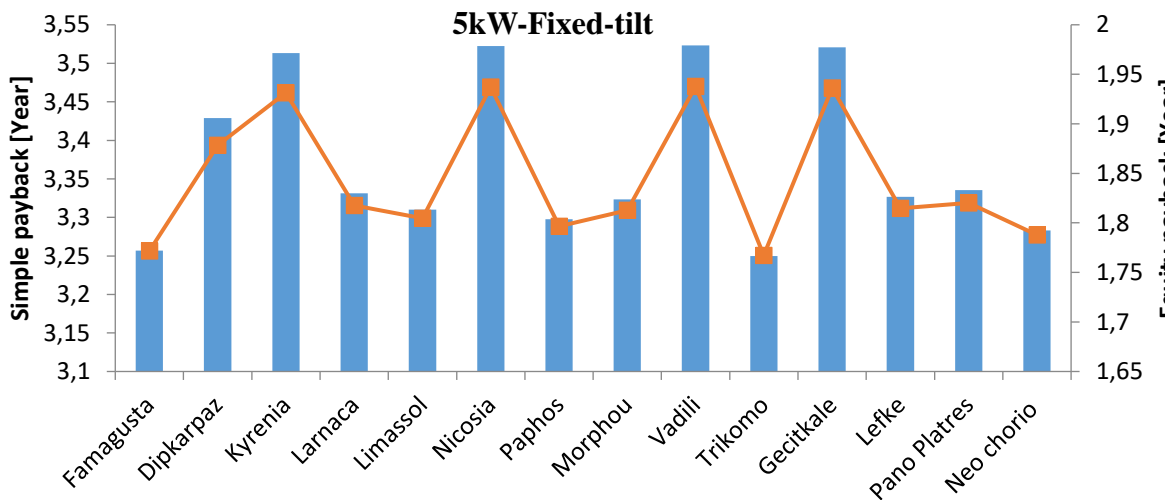


Figure 4. Continued



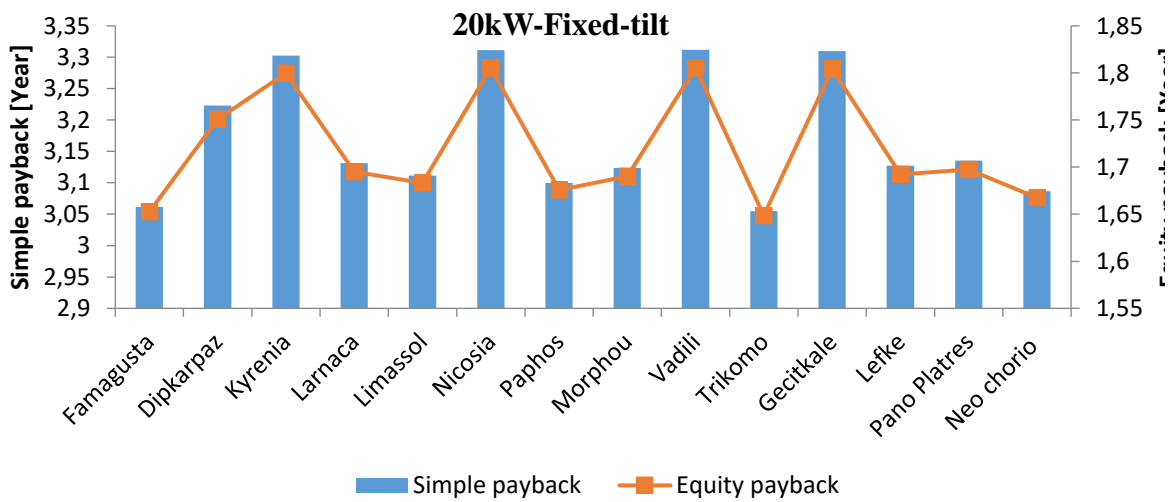
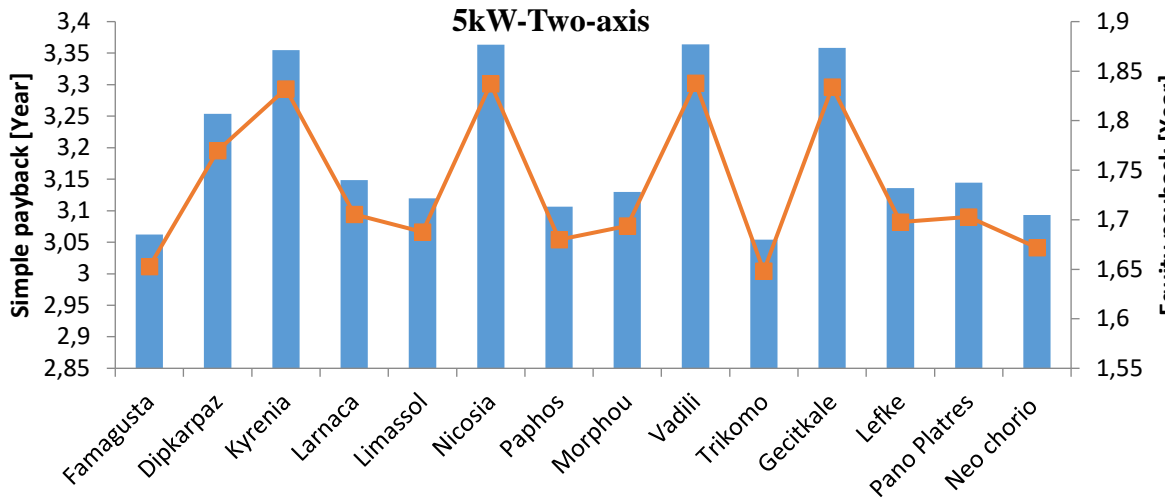
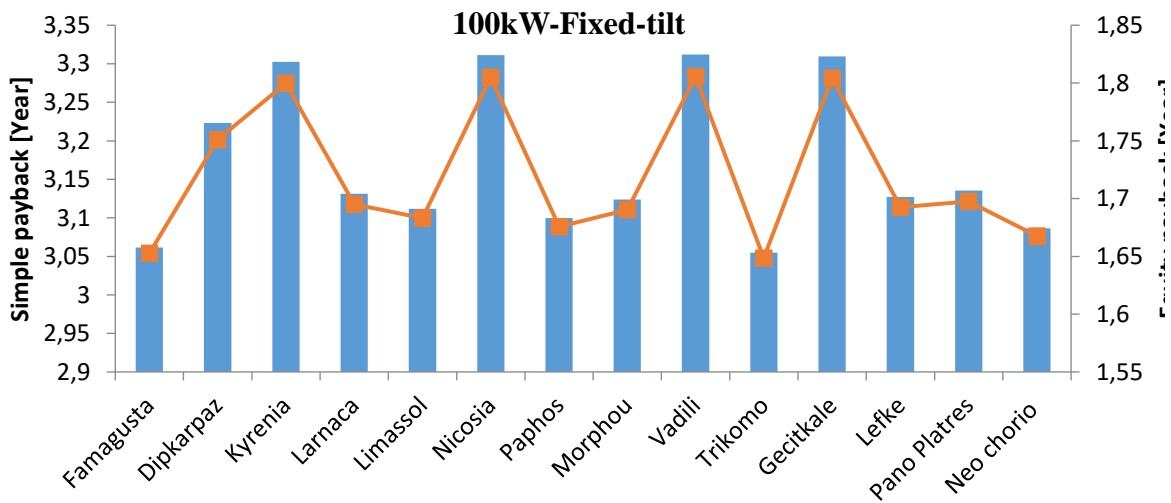


Figure 5. Simple payback and equity payback for the developed systems



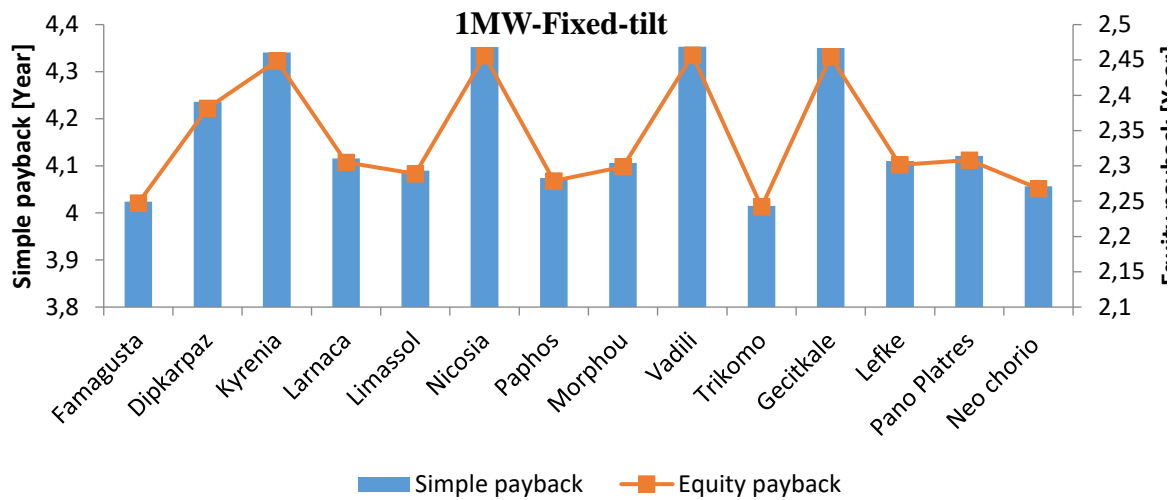
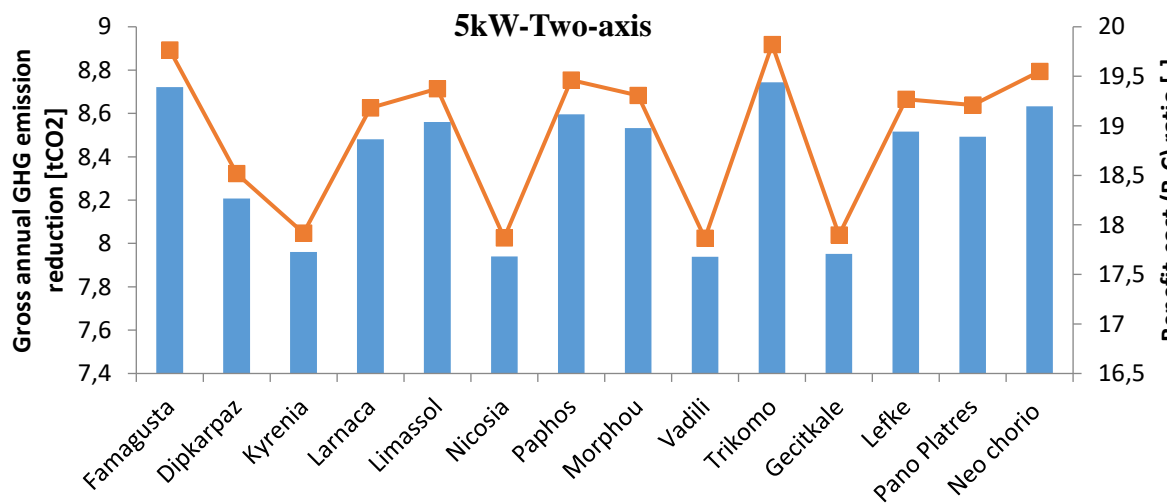
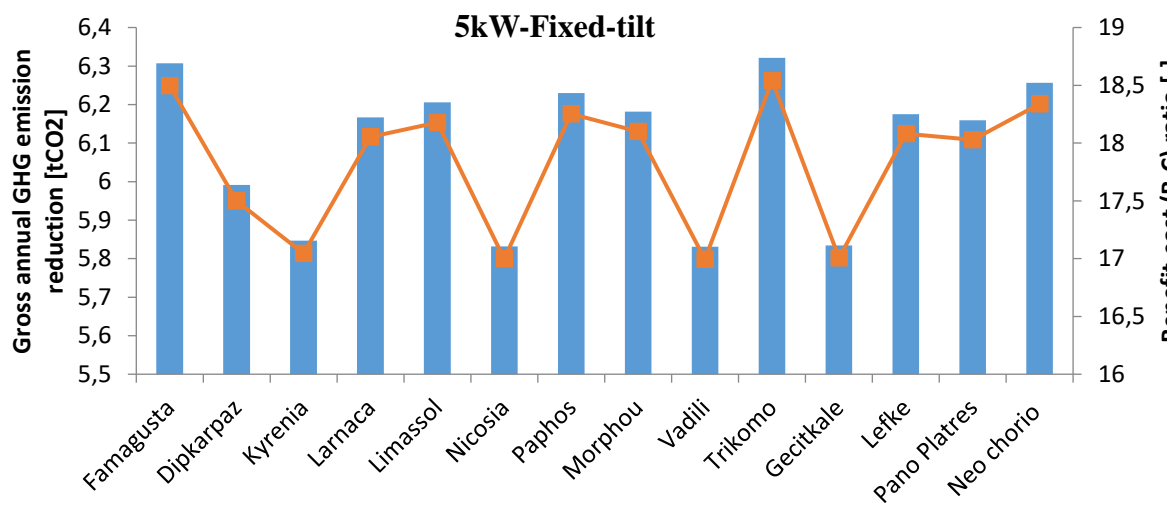
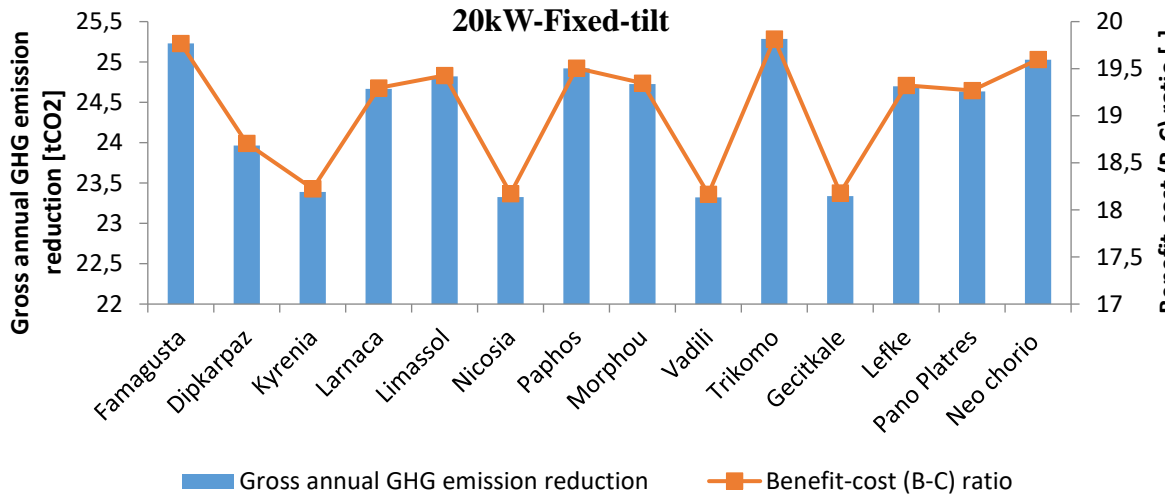
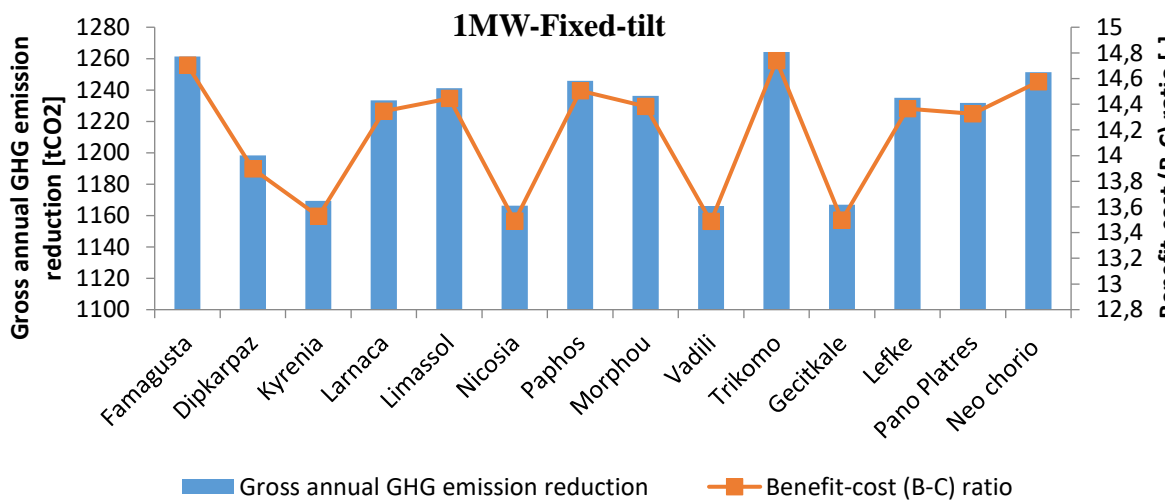
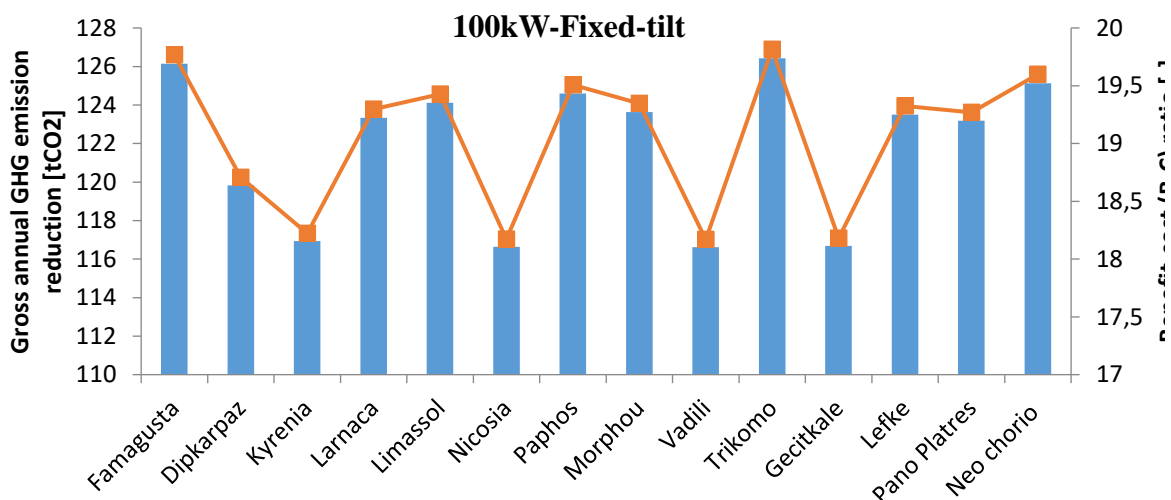


Figure 5. Continued



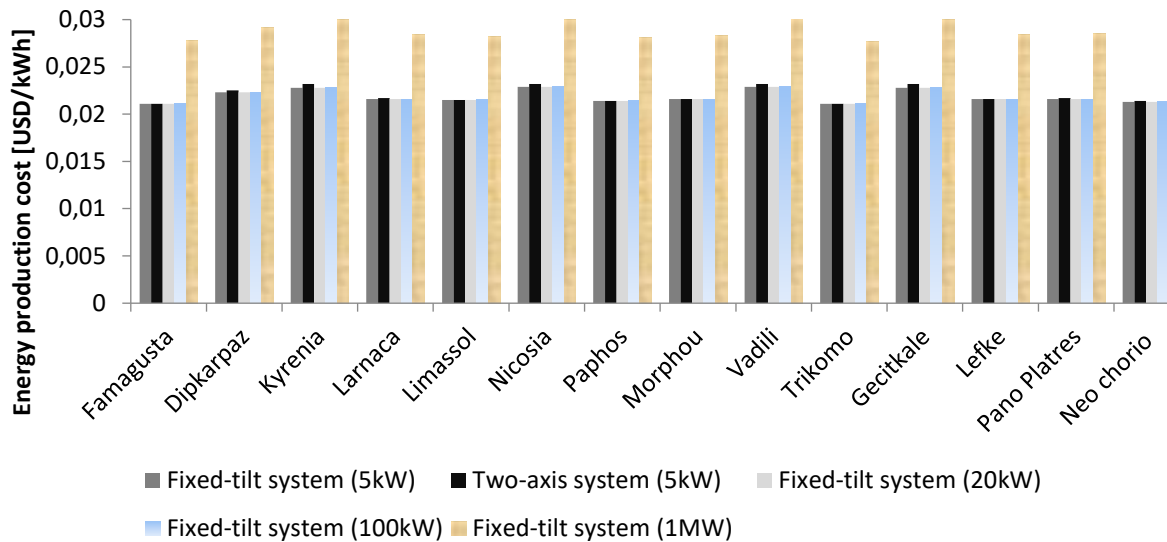


**Figure 6.** Total annual GHG emissions reduction and B-C ratio for the developed systems



**Figure 6. Continued**





**Figure 7.** Electrical generation cost for the developed systems

#### 4. Conclusions

The study evaluated the potential of wind and solar energy at 14 selected sites in Cyprus. Monthly and annual data on solar radiation were analyzed, revealing the high solar energy potential in the selected sites. As a result, these locations are suitable for the installation of future PV systems. The feasibility of different scale PV systems is evaluated using RETScreen software, and the results indicate the economic feasibility of the proposed 5 kW systems with sun tracking, 20 kW, and 100 kW systems. Overall, the study highlights the promising prospects for the use of solar energy in Cyprus, suggesting its suitability for meeting energy needs through PV systems. Besides, the study's findings are consistent with the seventh Sustainable Development Goal (SDG 7) by encouraging the adoption of renewable energy technologies, such as wind and solar energy, to ensure access to modern, reliable, sustainable, and affordable energy for all.

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**\* The other presentations delivered at the symposium:**

- Elements of Change and Continuity in 21st. Century Security - Asst. Prof. Filiz KATMAN (Istanbul Aydin University)
- Search And Rescue Operations in Earthquake - Prof. Dr. Arkadiusz KWIECIEŃ (Cracow University of Technology)
- Development of Turkiye Azerbaijan Relationship - Dr. Fuad CHIRAGOV