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GEOPOLITICS AND ENERGY

This article provides a brief overview of the most relevant aspects related to the geopolitics of energy, a key issue in international relations. It is closely tied to the existing geopolitical conflicts between Western countries and Russia, stemming from the war in Ukraine. Hydrocarbons remain pivotal in the context of primary energy. Prices are influenced not only by traditional supply and demand relationships but also significantly by geopolitical factors. Moreover, climate change policies fall within the scope of geopolitics, primarily because energy economics directly ties to energy security. In this regard, clean energies offer the requisite independence, bypassing ties with undesirable suppliers.

Geopolítica y energía

Este artículo ofrece una breve panorámica de los aspectos más relevantes relacionados con la geopolítica de la energía, una cuestión clave en las relaciones internacionales. Está estrechamente ligada a los conflictos geopolíticos existentes entre los países occidentales y Rusia, derivados de la guerra en Ucrania. Los hidrocarburos siguen siendo fundamentales en el contexto de la energía primaria. Los precios se ven influidos no solo por las relaciones tradicionales de oferta y demanda, sino también de forma significativa por factores geopolíticos. Además, las políticas de cambio climático entran en el ámbito de la geopolítica, sobre todo porque la economía de la energía está directamente vinculada a la seguridad energética. En este sentido, las energías limpias ofrecen la independencia necesaria, evitando los vínculos con proveedores indeseables.

Keywords: geopolitics, geoeconomics, energy, European Union, Ukraine war, energy in Eastern Mediterranean, world energy trilemma.

Palabras clave: geopolítica, geoeconomía, energía, Unión Europea, guerra de Ucrania, energía en el Mediterráneo oriental, trilema energético mundial.

JEL: F51, F60, F62, Q41, Q42, Q43, Q47.

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1. Introduction

The primary challenge with a term as overused as geopolitics is its definition. Rather than delving into the myriad of existing definitions, we align with Lacoste's (2008) perspective that *geopolitics is the study of the rivalries of power or influence that exist in a given territory*.

The relationship between power and the territory over which it is exercised can be elusive and sometimes unattainable, a fact that marks the whole of human history. Hence, power and territory are fundamental to understanding past and present geopolitical conflicts.

In this way, political geography and geopolitics become the center of the power struggles between the so-called nation-states, a fact that, although born in the 17th century with the Treaty of Westphalia, remains as pertinent today as it was then.

When geopolitics is related to energy resources, we enter fully into the context of natural resources, the scarcity of which contributes to increasing tensions and conflicts between those who need these resources for their survival or economic development and those who have them and impose certain conditions to yield them. An obvious geopolitical issue is that energy resources are distributed very unevenly throughout the world's geography, with the result that there are certain geographies lacking them. A very visible circumstance in Europe, as it was in the United States until they were able to develop a new energy potential based on fracking techniques.

It's worth noting that the United States (US) reached *Hubert's peak*¹ in 1971. This milestone prompted them to fortify ties in the Middle East to secure ample oil for economic growth. Later, fracking re-established the US's dominance in oil and gas production, though this energy source's production is waning.

Around 70 % of oil and gas reserves are concentrated in what is known as the strategic ellipse (Figure 1). A

region of the world stretching from the Middle East to the north of Western Siberia. A fact that clearly shows why there have been multiple conflicts in these regions throughout the 20th century and during the present one. Sometimes driven by the anxieties of some countries to control the primary energy sources in the region as was the case of Saddam Hussein's Iraq invading Kuwait in 1990, or the Middle East unrest following the 9/11 attacks. Events that turn geopolitics into geoeconomics insofar as they involve the use of the economy and, in this case, of dominance over natural resources, as an element of power. This leads to an understanding of geoeconomics as the maintenance of an enduring rivalry between nations using economics rather than war, or in a different angle as those commercial strategies to acquire mastery of certain key technologies and/or to conquer certain segments of world markets.

In 2022, the global daily oil consumption averaged 99.6 million barrels.² Given that year's average price of \$ 100.93,³ this amounted to over \$ 10 billion daily or exceeding \$ 3.5 trillion annually. This shows that oil is the most valuable commodity in world trade, far ahead of agriculture or metals. Which, in the first case, if we compare the consumption of oil with that of wheat in 2022, in which some 790 million metric tons of wheat were consumed⁴ at a price of about 430 dollars per ton,⁵ we reach a figure of about \$ 440 billion. Nothing comparable. All of which indicates the importance of oil in the world's economic performance and the geopolitical conflicts that surround it. An issue that can also be applied to natural gas which, like oil, is very irregularly spread throughout the earth's geography.

The use of petroleum, as experts say, is taken to its ultimate consequences: everything is exploitable in this

¹ The *Hubbert's peak* determines the point of maximum production based on discovery and production rates and cumulative production.

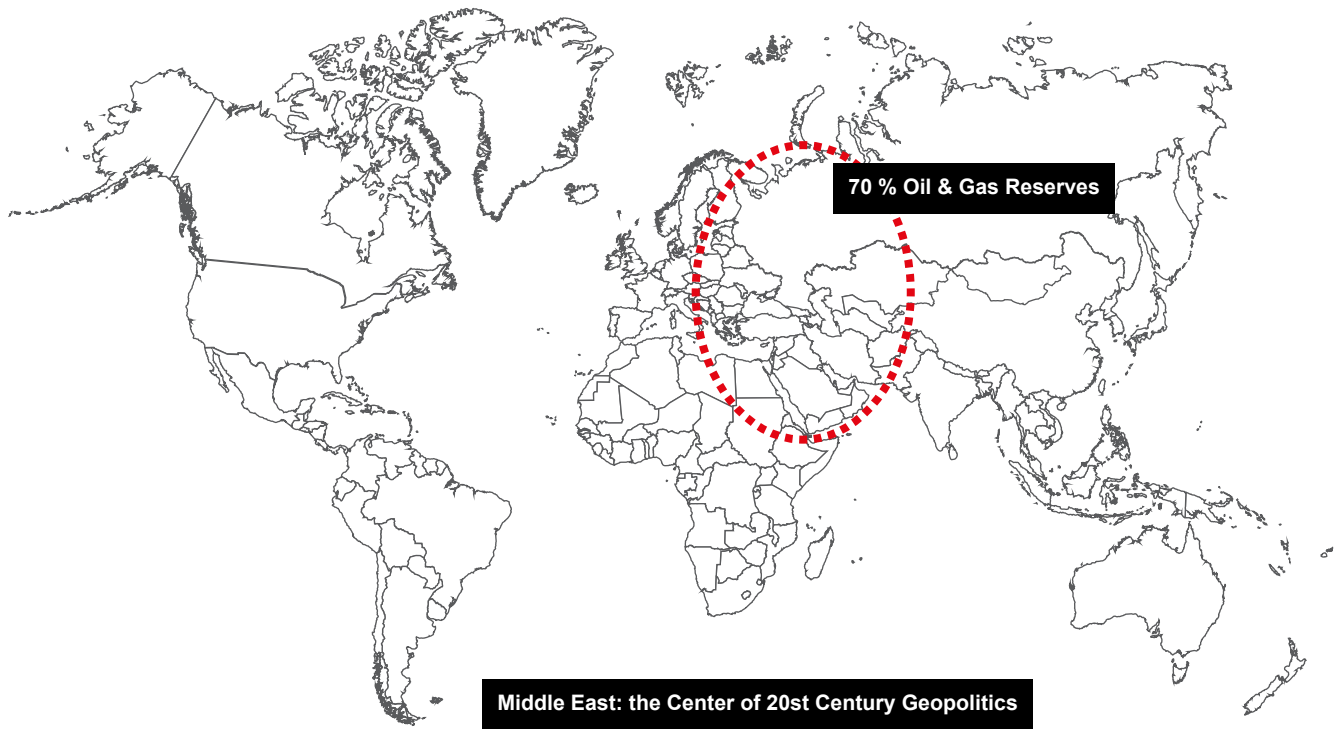
² Statista (2023). <https://www.statista.com/statistics/271823/global-crude-oil-demand/>

³ Statista (2023). <https://www.statista.com/statistics/262860/uk-brent-crude-oil-price-changes-since-1976/>

⁴ Statista (2023). <https://www.statista.com/statistics/1094056/total-global-rice-consumption/>

⁵ Statista (2023). <https://www.statista.com/statistics/675822/average-prices-us-wheat/>

FIGURE 1
OIL & GAS STRATEGIC ELLIPSE



SOURCE: Map drawn by the author.

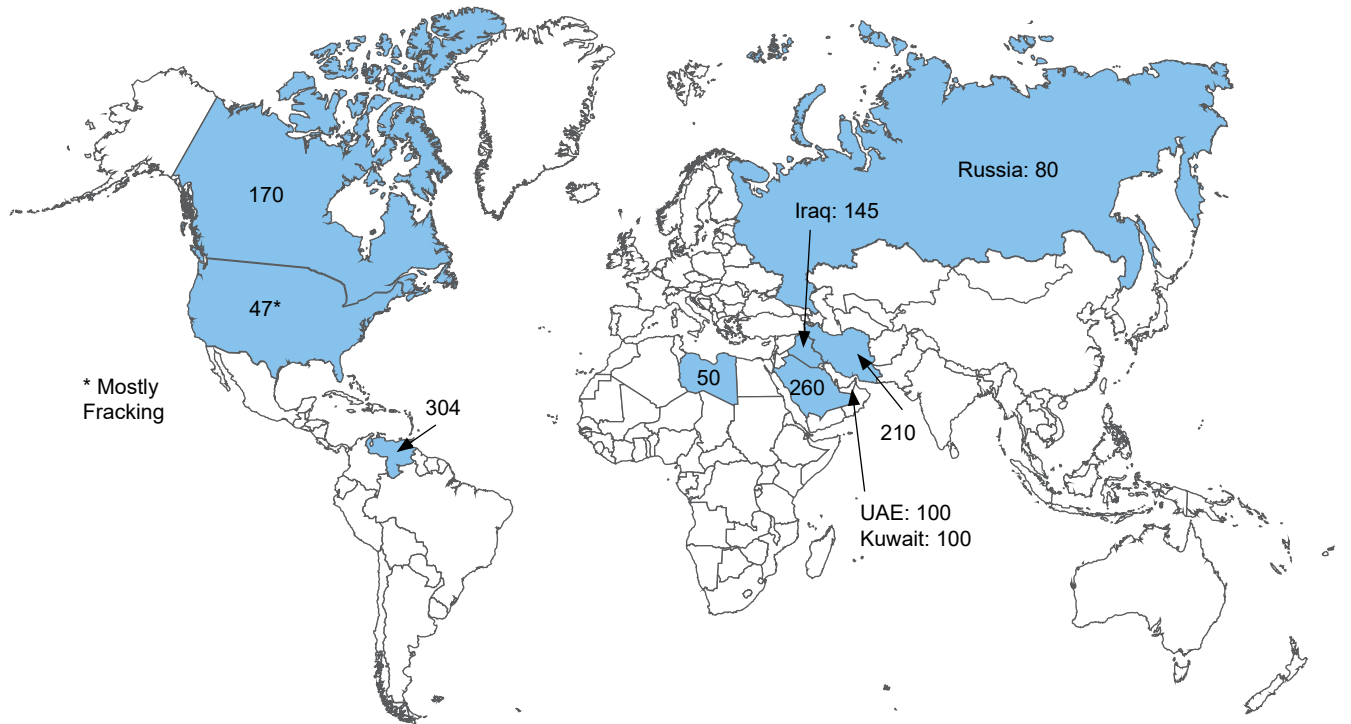
hydrocarbon, whose applications are multiple. It serves as a fuel to power vehicles, heat buildings and produce electricity. In addition, the petrochemical industry uses it as a raw material to manufacture products such as plastics, polyurethane, solvents, and hundreds of other intermediate and consumer goods.

Similar conclusions are reached when natural gas is considered. It is another hydrocarbon that can be used as a feedstock in multiple uses. For example: to produce chemicals, as a fertilizer or to produce hydrogen. Additionally, it is also used as an element to heat buildings or homes, or simply for cooking. The electricity sector is one of the largest consumers, as gas is key to the generation of electricity in combined cycle power plants and other production installations. Hence the need

to control the sources of supply and the geopolitical tensions that are intertwined in international relations.

It should not be forgotten either, that hydrocarbons have an unusual behavior when prices are considered in relation to demand, since in some cases they behave elastically and in others inelastically, a surprising fact that has a determining influence on the markets, while this characteristic, together with the problem of climate change, is driving the search for alternative sources of energy, such as renewable energies, which today play an important role in the energy strategy of the different countries. This fact demonstrates the lack of coherence in the European Union (EU), where each country sets its own criteria for establishing a framework for the use of the different primary energy sources, which also

FIGURE 2
LARGEST OIL RESERVES
(In billion barrels)



SOURCE: Map by the author using data from *BP Statistical Review of World Energy 2022*. <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2022-full-report.pdf>

weakens Europe’s geopolitical position in the global context.

This paper analyzes the geopolitical problems currently encountered in relation to oil and other hydrocarbons, especially the so-called natural gas. The ever-increasing needs in the use of oil and gas by the major consumers and the scarcity of finding them globally increase the geopolitical tensions around the world.

2. Primary energy geopolitical issues

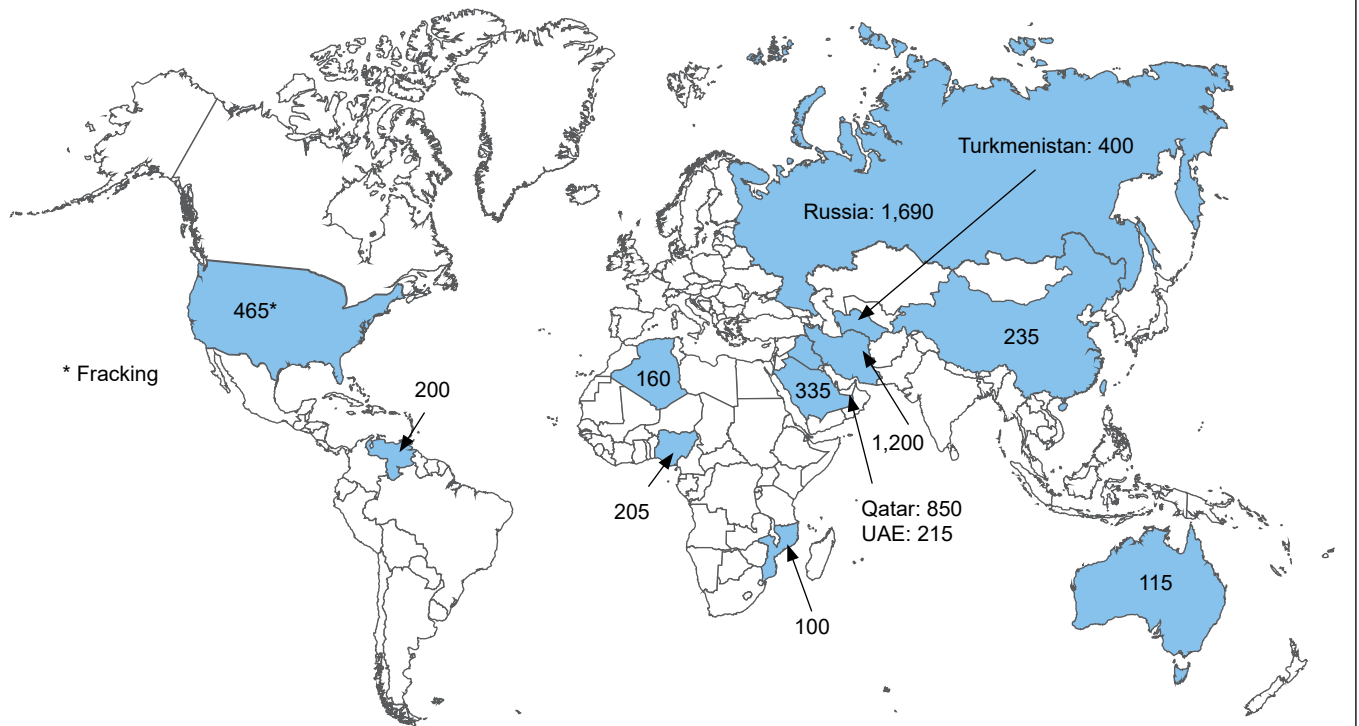
As previously noted, oil exhibits an inconsistent elasticity of demand, sometimes behaving one way and sometimes the opposite. This behavior affects oil

prices and their association with prominent geopolitical events.

Given that geopolitics is intertwined with geography, it’s instructive to briefly highlight the nations harboring the most significant oil and gas reserves. Such knowledge informs geopolitical strategies and underscores the urgency for nations to reorient their current strategies to circumvent energy dependence on other countries. This impetus has also accelerated the pursuit of renewable energies.

Figure 2 shows in billions of barrels of crude oil the current reserves in various countries, with the case of the United States where most of it corresponds to fracking facilities.

FIGURE 3
COUNTRIES WITH THE LARGEST GAS RESERVES
 (In trillion cubic feet)



SOURCE: Map by the author using data from *BP Statistical Review of World Energy 2022*. <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2022-full-report.pdf>

Following the same principle, Figure 3 shows the largest natural gas reserves, where it can be seen the relevant role played by the Russian Federation in the context of hydrocarbons and the weight that some Middle Eastern countries also have.

While coal has become contentious due to climate change concerns, it remains a fundamental electricity source in numerous countries, particularly in Asia. Germany’s recent challenges, prompted by the Ukraine conflict and its nuclear decommissioning policy, led to the reactivation of coal-fired power plants while reevaluating its energy mix.

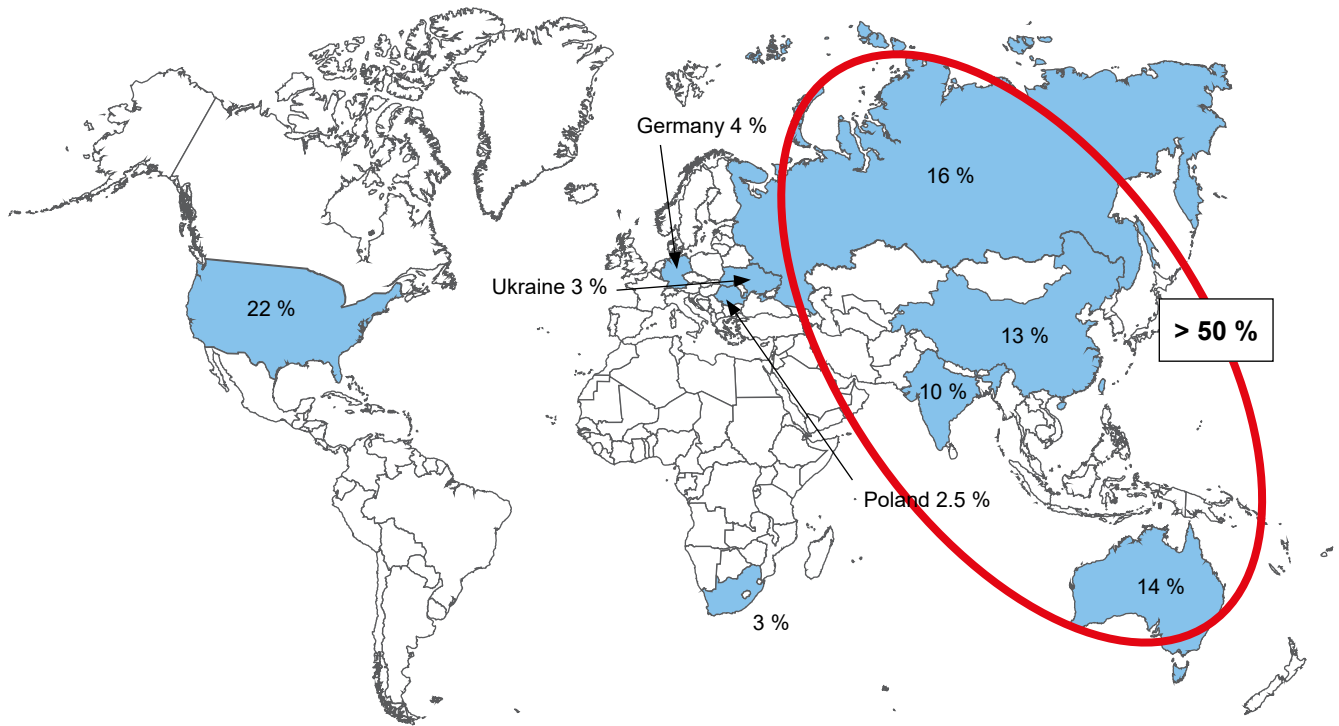
The saying «a picture is worth a thousand words» rings true. Figure 4 shows the distribution of coal

according to the largest existing reserves. A map that, compared to the two previous ones (Figures 2 and 3), gives an idea of why coal is currently used around the world.

The «Coal Ellipse» visually demonstrates the concentration of coal reserves in Asia, elucidating the challenges in instituting a cohesive global policy against greenhouse gas emissions. This concentration also contextualizes China and India’s stances in the United Nations (UN) Climate Change Conferences (COP), particularly at COP26 in Glasgow, 2021. Both nations projected zero emissions by 2060 (China) and 2070 (India).

As a conclusion, regardless of the policies that in most of the countries around us are aimed at a drastic

FIGURE 4
THE COAL ELLIPSE



SOURCE: Map by the author using data from BP Statistical Review of World Energy 2022. <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2022-full-report.pdf>

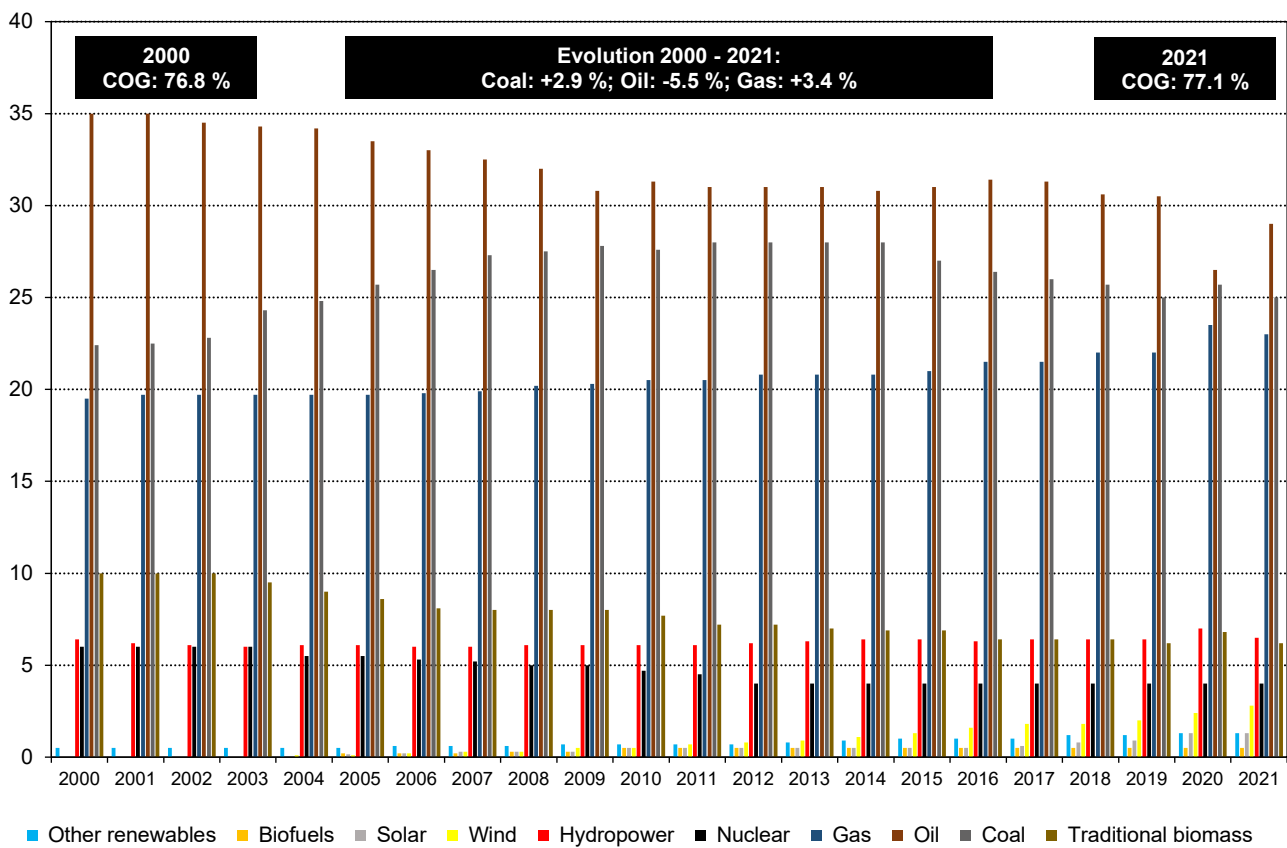
reduction of coal, oil or gas (COG materials) as the energy base in their different industrial, transport or domestic uses, the reality is that, as shown in Figure 5, these primary energy sources have been the key in the period 2000-2021, with the fact that coal use grew by almost 3 % in that 20-year period. It being the case that, of that global coal consumption, about 80 % is currently in Asia. A circumstance that, for the time being, hinders global greenhouse gas reduction policies worldwide.

That said, however, although timidly, the global energy mix shows a relatively significant growth in the use of renewable energies over the 20-year period, as shown in Figure 6.

In a nutshell, it can be concluded that at present: *i)* coal, oil and gas continue to dominate global primary energy consumption; *ii)* while Europe and North America have reduced consumption of greenhouse gas-producing energy sources, Asia has increased them substantially in the decade 2011-2021, leading to serious effects on greenhouse gas emissions reduction policy and increasing geopolitical tensions; and *iii)* Asia accounts for almost 50 % of the primary energy responsible for greenhouse gases. Europe will account for 12 %, and North America for 18.5 %.

Three aspects that highlight a new geopolitical issue, namely the confrontation between the energy policies

FIGURE 5
COAL, OIL AND GAS DOMINATE ENERGY SUPPLY
(In %)



SOURCE: Chart by the author using data from Eurostat. Energy Statistics. An overview. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Energy_statistics_-_an_overview

of Europe and the United States in the reduction of greenhouse gas emissions, and the policies of most Asian countries that go in the opposite direction. A new geopolitical confrontation that moves away from territorial control of energy sources to policies related to climate change.

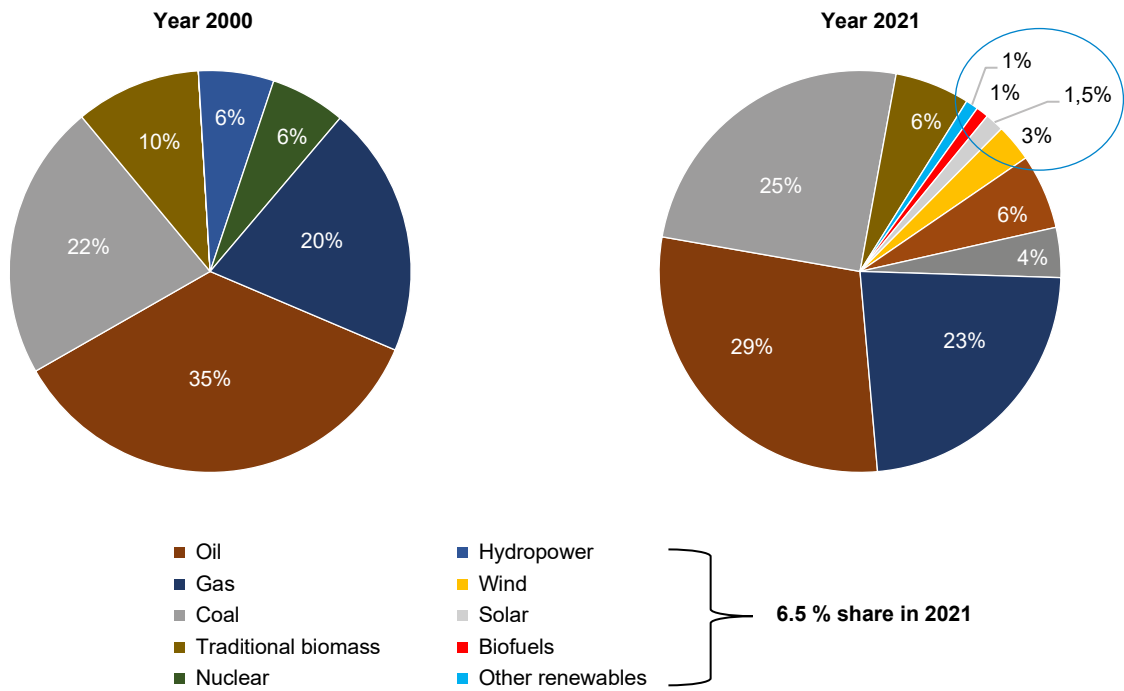
3. Energy economics

Oil plays a pivotal role in the global economy, and its prices are significantly swayed by geopolitical tensions.

When such conflicts arise, they can alter the oil price structure. Given oil's integral place in the economic framework of nations and the global stage, it's crucial to examine how the market responds to the price-demand relationship. That is, discerning whether oil has an elastic or inelastic behavior. Despite geopolitical conflicts, markets in open economies persistently adhere to their intrinsic supply and demand rules. However, at times, these might be influenced by external factors.

Caldara *et al.* (2016) study offers intriguing insights on the elasticity of oil price fluctuations. Though the

FIGURE 6
WORLD ENERGY MIX
(2000-2021)



SOURCE: Chart by the author using data from H. Ritchie and Max Roser. *Energy Mix*. <https://ourworldindata.org/energy-mix>

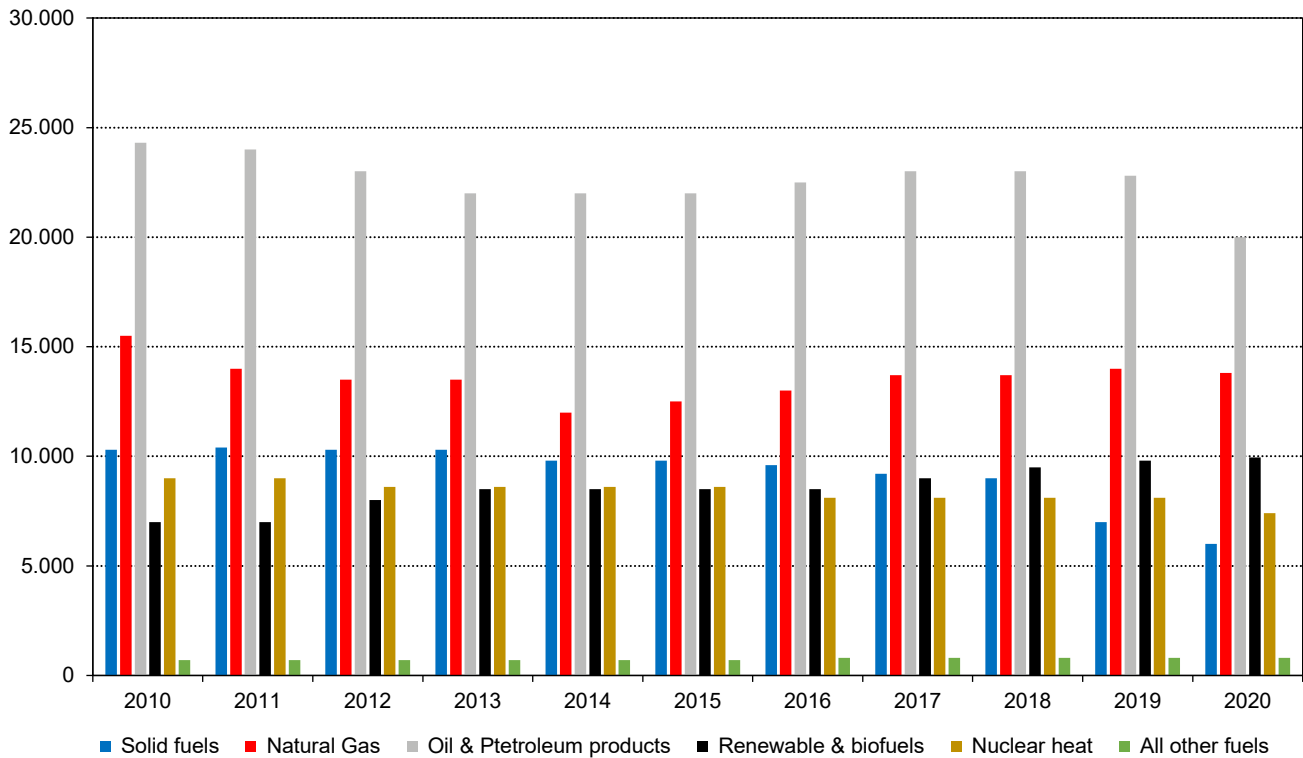
data is from 2016, it remains relevant, considering that today's market conditions are not drastically different. Key takeaways from the study are:

- 1) Supply and demand shocks account for about 50 % and 35 % of oil price fluctuations, respectively.
- 2) A decrease in oil prices due to supply shocks enhances economic activity in advanced economies but curtails it in emerging ones.
- 3) Oil market elasticities can also elucidate oil prices and help gauge the multipliers of oil prices on economic activity.

The influence of geopolitical issues on prices is, however, difficult to estimate numerically, particularly regarding the formation of the price of a barrel of oil, but it is safe to say that, in some way, geopolitical

conflicts play a determinate role in supply and demand shocks. An economically reasonable criterion, which leads to believe that both demand and supply are sensitive to geopolitical conflicts which, therefore, influence prices. In this respect, the examples provided by Ali Al-Naimi, who from 1983 until his retirement was the president of Saudi Aramco and who for 20 years was Saudi Arabia's Minister of Petroleum, leaves no doubt as to the influence of geopolitics on crude oil prices. Although the book to which we refer is full of examples, suffice it to mention the OPEC embargo in the seventies of the last century that joined the chaos in the oil markets produced by Iran in 1979, which led Saudi Arabia to produce more than 10 million barrels a day above the 8 million barrels it was pumping into the market until then,

FIGURE 7
GROSS AVAILABLE ENERGY IN THE EUROPEAN UNION



SOURCE: Calculations made by the author using Eurostat Gross Available Energy data.

with the aim of keeping prices stable at around 18 dollars a barrel (Al-Naimi, 2016, p. 116 and following).⁶

The case of Europe

As this paper is mainly concerned with the energy transition in the European Union, as well as the path towards a decarbonized economy, we will make a brief analysis of the European energy situation with some geopolitical considerations.

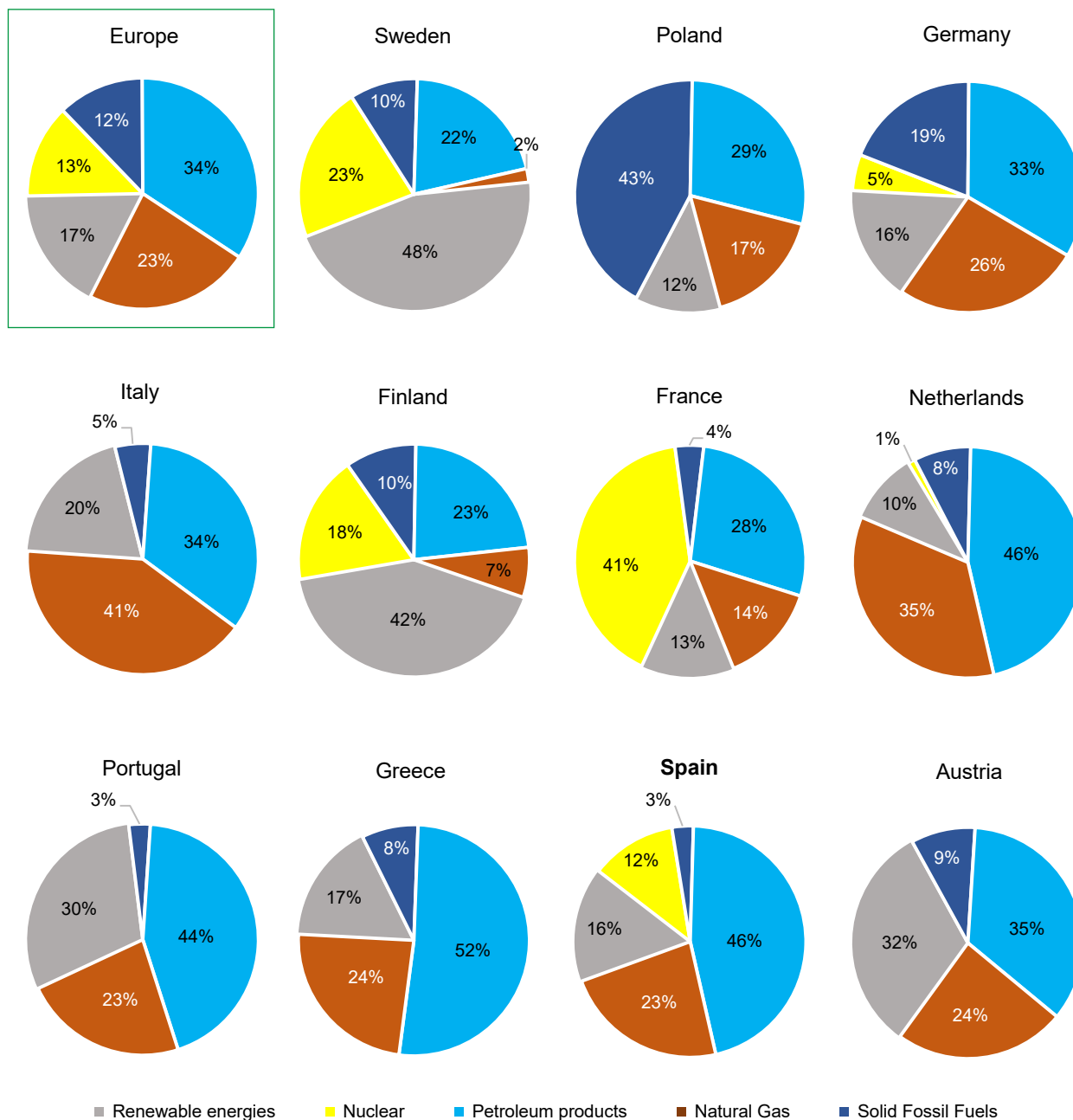
The first useful element to consider when dealing with energy has to do with what is called: Gross Available Energy, which is understood as the overall energy supply needed to sustain all the economic activities of a country. This includes energy needs for energy transformation, operations required by the energy sector itself, transmission and distribution losses, final energy consumption and the use of fossil fuel products for purposes not necessarily required, such as the needs of the chemical industry, as well as other fuels purchased within each country being used for other needs.

The Gross Available Energy is an energy aggregate that is calculated using the following formula:

⁶ Apart from this case, the examples of the connection between geopolitics and the oil market given by Al-Naimi are numerous in many pages of his book.

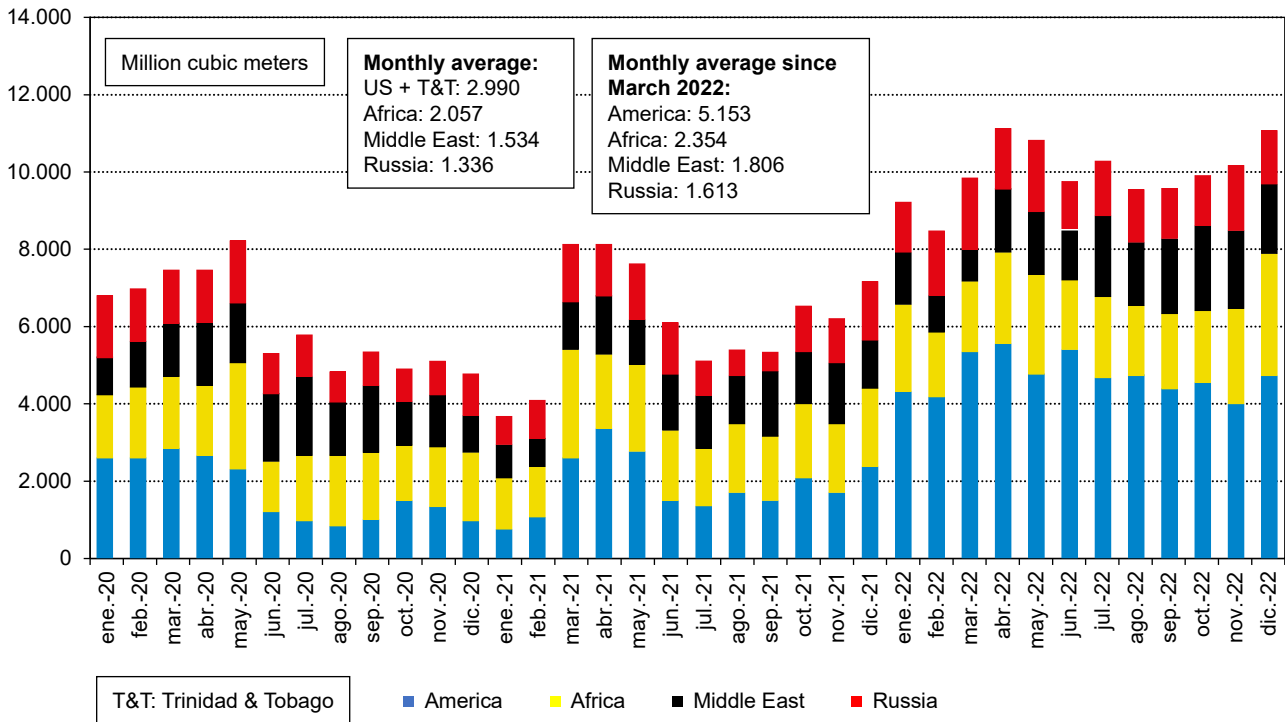
FIGURE 8

2021 EUROPE'S ENERGY MIX AND OTHER SELECTED EUROPEAN COUNTRIES



SOURCE: Chart by the author using data from *BP Energy Outlook 2022*. <https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/energy-outlook/bp-energy-outlook-2022.pdf>

FIGURE 9
MONTHLY LNG IMPORTS BY REGION OF ORIGIN
(27 EU countries)



SOURCE: Chart by the author using data from Eurostat.

$$\text{Gross available energy} = \text{Primary production} + \text{Recovered and recycled products} + \text{Imports} - \text{Exports} + \text{Stock changes}$$

Based on Eurostat data, Figure 7 shows the Gross Available Energy in the European Union from 2010 to 2020. Data (vertical axis) are given in petajoules⁷ (10¹⁵ joules).

The year 2020 shows the effect of the COVID-19 pandemic. With respect to the use of oil and gas, the decade (2010-2020) reflects the policy of reduction in the use of these hydrocarbons, since in 2010, they accounted for

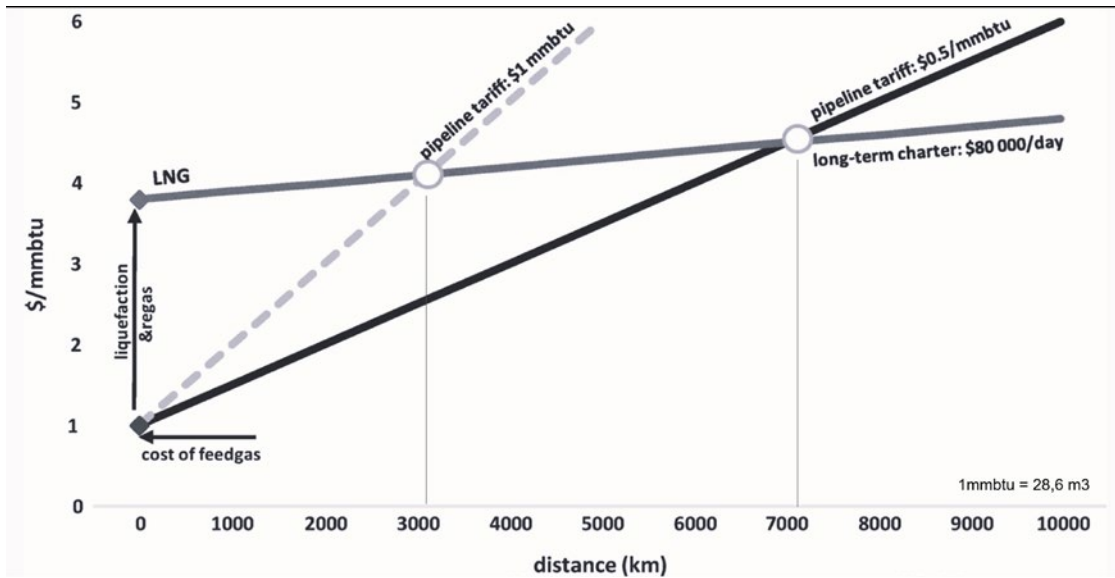
75.5 % of the total, and in 2020 they had been reduced to 69.9 %. In addition, considering nuclear energy in the chapter on renewable energies, the change over the decade was 24.5 % in the first year (2010) to 30.1 % in the last year (2020). A 5.6 % increase.

However, as on other key issues, the European Union does not have a common energy policy. Its directives in relation to energy are essentially aimed at aspects related to climate change and emissions reduction. Elsewhere, there is no European vision on the critical aspects related to a common energy portfolio. This is a very difficult aspect to reconcile since the energy structure of each country is totally different.

⁷ 1 petajoule equals, approximately, 23.86 TOE (Ton Oil Equivalent).

FIGURE 10

PRICE COMPARISON BETWEEN LIQUEFIED GAS BY LNG TANKER AND PIPELINE GAS TRANSPORTATION AND PIPELINE GAS TRANSPORTATION



SOURCE: Molnar (2022).

To meet its energy needs, as is well known, each country uses the types of energy available to it in terms of both affordable costs and accessibility of energy sources, which ultimately results in a portfolio of different primary energies to meet the overall energy needs of each individual country. This is what is defined as the energy mix.

If one considers the energy mix of European countries, one notes the enormous diversity among all of them, which makes it almost impossible to develop a common electricity interconnection policy at the European level. This is further complicated by the fact that electricity distribution and trading prices also vary considerably from one country to another, as market structures are vastly different from one market to another.

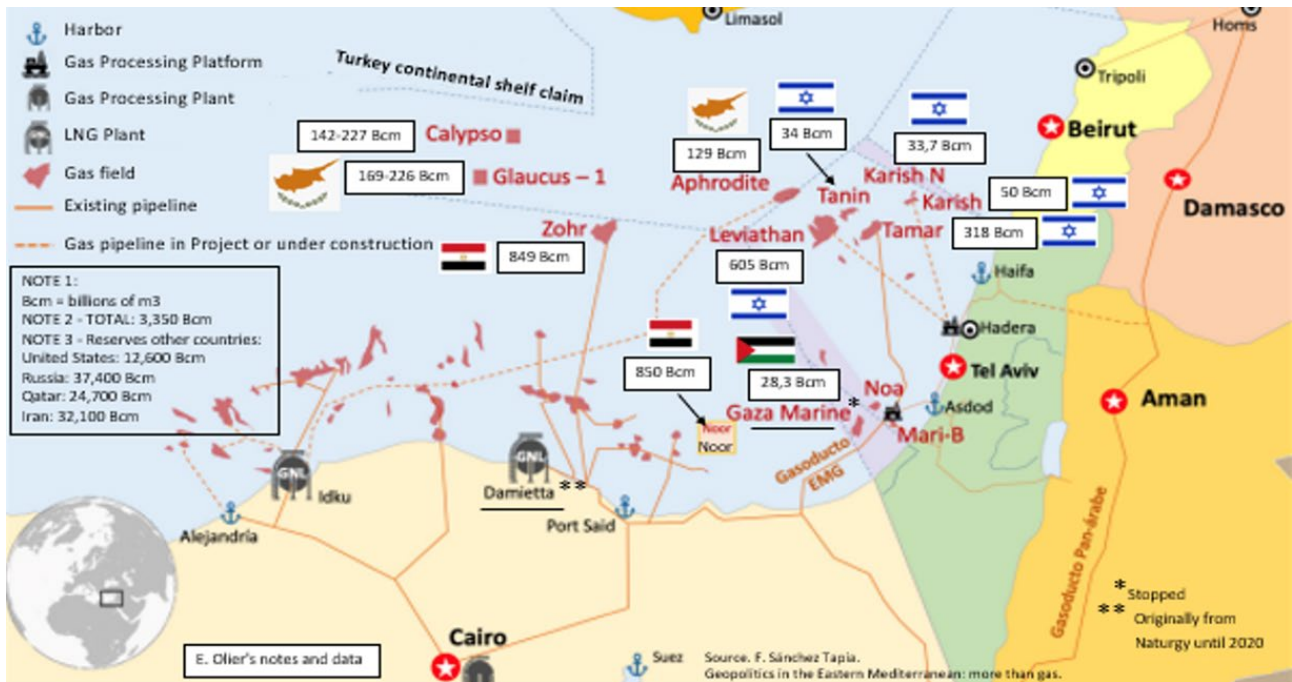
As shown in Figure 8 which has been constructed by the author with data from *BP Energy Outlook 2022*, the energy mix in Europe depends 69 % on hydrocarbons

(solid fossil fuels, oil, and gas), leaving 30 % between renewable and nuclear energies (totaling between the two only 99 % due to the fact that decimals have not been including the picture).

Figure 8 is self-explanatory. The first conclusion is that European countries are highly dependent on hydrocarbons, with the case of the Scandinavian nations having made an «aggressive» bid to reduce this dependence. The second conclusion has to do with nuclear energy, which in the case of France is a fundamental element in its primary energy structure, while in the rest of the countries its use is being discarded, except for Poland, highly dependent on coal, which today has decided to start the construction of a new nuclear power plant in the country.

Overall, it can be said that Europe is a region in dire need of hydrocarbons imported from abroad, given that its production is very low. According to the data shown in

FIGURE 11
GAS IN EASTERN MEDITERRANEAN



SOURCE: Map by Sánchez-Tapia (2020) with notes by the author.

the *BP Statistical Review 2022*⁸ and based on a simple calculation it is proven that in the last decade (considering the 2011-2021 timeframe), Europe consumed a total of 14 million barrels per day on average, resulting in a deficit of almost 11 million barrels per day, also on average, as production was about 3.5 million barrels per day on average.

In this context, given the need for most European countries to import hydrocarbons from abroad, each country tries to develop a strategy that meets its needs, which obviously makes a common policy extremely difficult. A circumstance that influences the geopolitical context insofar as each European country pursues the

energy alliances it considers most appropriate for its own benefit.

A fact that is equally applicable to natural gas needs. Using the same data offered by BP Statistical Review 2022, it turns out that in the decade under consideration (2011-2021), 256 billion cubic meters of natural gas were produced in Europe (on average), with a consumption of 547 billion cubic meters also on average, resulting in an average deficit of 291 billion cubic meters in that decade.

All of the above confirms a picture according to which Europe is extremely weak energetically, with the circumstance that this weakness leads European countries to seek their energy solutions independently, resulting in a scenario that shows a Europe full of energy islands, especially when a European energy network of gas and electricity is practically non-existent.

⁸ BP Statistical Review 2022. *Op. cit.*

FIGURE 12
TURKEY'S NATURAL GAS AND OIL PIPELINES MAP



SOURCE: Turkish Ministry of Energy and Natural Resources. <https://enerji.gov.tr/bilgi-merkezi-haritalar>

Considering the structure of gas suppliers in Europe, Figure 9 shows the effect of the war in Ukraine, according to which Europe has been changing the portfolio of gas providers, so that, in the three years from January 2020 to December 2022, Russia lost more than 25 % of its market in Europe and the United States has become the European reference supplier, which has almost doubled its gas deliveries in the decade in form of LPG (liquefied petroleum gas).

According to Figure 9, due to the war in Ukraine and the sabotage occurred with the Nord Stream pipeline connecting Russia and Germany, Europe is heavily dependent on liquefied natural gas (LNG), and it can be seen how the structure of the different European suppliers has changed since 2020, where Russia lost

25 % of the market in Europe by 2022 (today very much reduced).

A geopolitical change that has also forced Russia, after its illegal invasion in Ukraine, to practically abandon its European market and move its supplies to Asia, mainly to India; obviously, at much lower prices than the spot price, which, apart from the cost of the war for Russia, is reflected in the fall of the ruble, which has depreciated against the dollar by nearly 40 % since the beginning of 2023 until today.

Going back to energy economics and analyzing supply prices, the price of liquefied gas is often the subject of discussion with respect to the price of gas transported by pipeline, which intuitively seems that the supply by pipeline is cheaper than the transport of liquefied gas by ship. In

this respect, Figure 10 by Molnar (2022) clearly shows that the actual situation depends on the distance (apart from the price charged per ton and the cost of the long-term charter per day), with one solution being cheaper than the other in some cases.

4. Gas in the Mediterranean

After petroleum products, natural gas is the second most important primary energy resource in Europe. From an economic point of view, gas is the most widely used primary energy source in industry, services, and households. It is also important in electricity generation, given the flexibility of combined cycle power plants. This means that the existence of gas in the eastern Mediterranean has become a strategic element to cover part of Europe's needs, which implies a new geopolitical perspective insofar as non-European countries, such as Israel, Egypt or even Palestine, have interests in this area of the Mediterranean. The only European Union country in the area is Cyprus (Aphrodite, Calypso, and Glaucus-1 fields).

The Figure 11 highlights the geopolitical complexity at hand, where various nations with divergent interests converge. Moreover, the reserves estimated in the area are relatively smaller than those of other nations, as indicated in notes in the figure, with Israel holding the majority. This scenario will compel Europe to continue sourcing gas from different origins, altering the balance concerning its gas suppliers.

The energy situation in the Levant European Mediterranean is now known as the *Energy Triangle* between Greece, Cyprus, and Israel. Countries that, in 2019, signed an agreement to develop the EastMed (Eastern Mediterranean pipeline), at which the then US Secretary of State Mike Pompeo was present, demonstrating the geo-strategic character of the project, as it aims to make Europe less dependent on gas supplies from Russia, a strategic objective of the United States. This strategy wasn't initiated during Donald Trump's presidency but was already evident during George W. Bush's tenure when

Condoleezza Rice served as Secretary of State. She had highlighted the vulnerabilities of the Russian economy, given its heavy reliance on hydrocarbon exports, and in line with this observation she stated that the United States wanted to change the structure of Europe's energy dependence on Russia, making it more dependent on US supplies. A policy that, in the wake of the war in Ukraine, became even more concrete in April 2022 with the creation of the *Joint Statement on US-EU Task Force on Energy Security*, which is coordinated at the highest level between the President of the European Commission, Ursula von der Layen, and the President of the United States, Joe Biden. A relationship that in the meeting held by the Task Force in April 2023, it was stated that the European Union had been the largest destination for US exports of LPG in 2022 (over 52 % of supplies), with imports from Russia at the end of 2022 being only 16 %, whereas in March of that year they had reached 32 %.

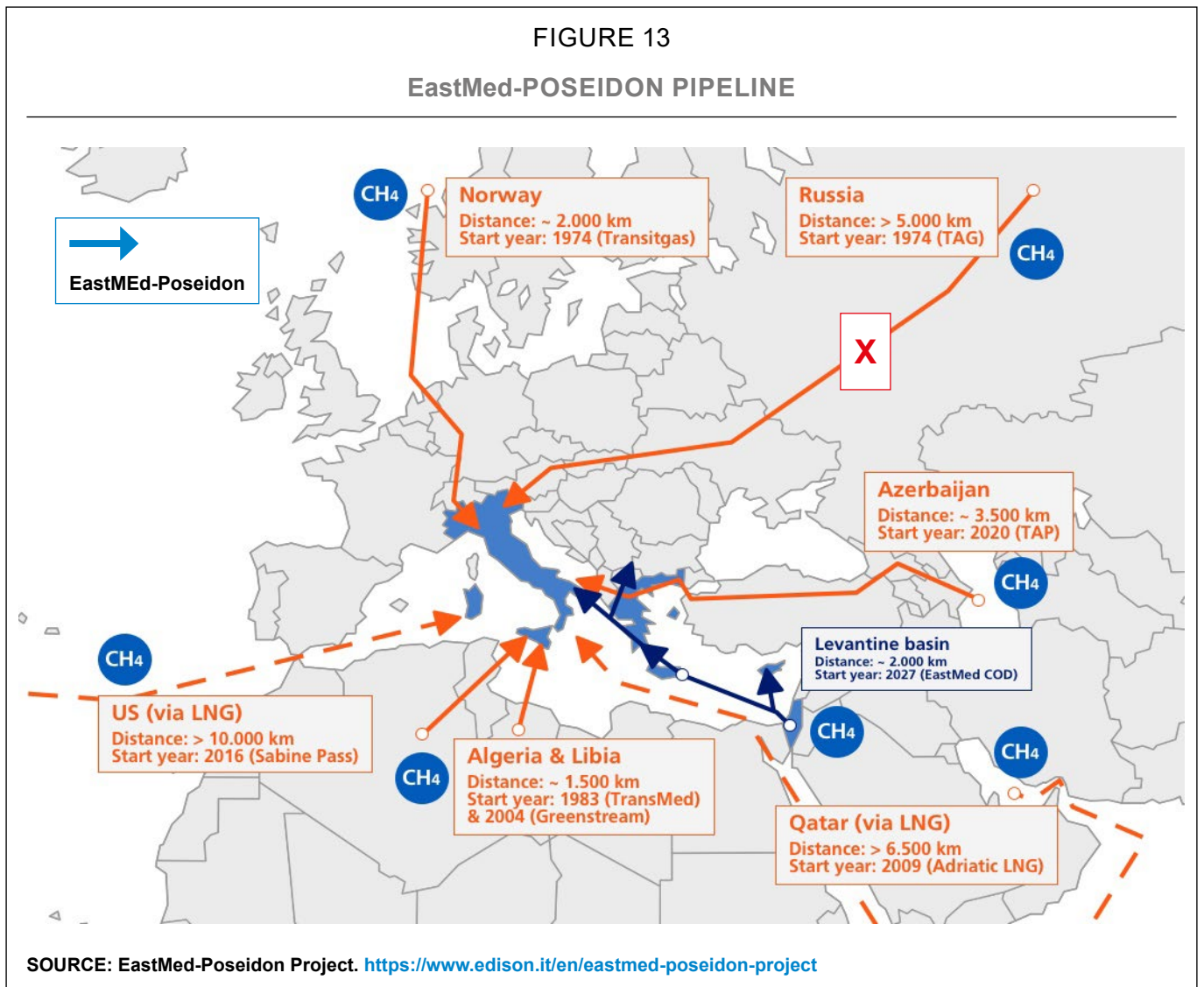
Turning to gas in the eastern Mediterranean, another key geopolitical element arises, namely Turkey's role in the distribution of gas through the corresponding infrastructures.

Turkey's position as a pivot country between the Middle East, Asia, Russia, and Europe makes it the center of oil and gas connections to Europe now that relations with Russia have been severed. It is also a key country for the future of Russia in its economic relations with other countries such as India. A circumstance that makes Turkey a key element in the geo-economy of energy that is also greatly influenced by its membership in NATO (North Atlantic Treaty Organization), which, in a way, disturbs relations within the Atlantic Alliance. A clear connection between geopolitics and geoeconomics in relation to energy and the economic survival of Europe due to its energy dependence.

Turkey currently relies on piped natural gas from Iran, Azerbaijan and Russia and liquefied natural gas imported mainly from Qatar and the United States. In 2019, according to Ackerman (2022), the imported gas bill amounted to \$ 41 billion for about 45 billion cubic meters (bcm).

FIGURE 13

EastMed-POSEIDON PIPELINE



After Cyprus, Israel and other countries began exploiting gas reserves found in their waters in the Mediterranean, Turkey set its sights on the Black Sea, having discovered some 540 bcm of gas resources in that area (Sakarya gas field), which could supply about 30 % of the country’s needs. However, given Turkey’s presence in NATO, although the European Union could facilitate with the United States the necessary investments to make Turkey independent of gas supplies from Russia, Turkey’s geostrategic position as a connecting element with Asia hampers these relations, particularly

due to the existing and/or future gas infrastructure connections that pass or may transit through the country. It is known also that Russia has suspended gas deliveries to Bulgaria through the TurkStream, which offers this pipeline the possibility of being used for other deliveries, given that it is now underutilized. So Turkish gas from Sakarya could use this infrastructure to Europe, thus supplying southern European countries.

Although, the information contained in Figure 12, according to the Turkish Ministry of Energy and Natural Resources, has been prepared for the purpose of

providing information to the users of the Ministry's website and does not constitute an official binding document, this figure shows the geopolitical importance of Turkey as a potential energy hub for Europe and, of course, its essential role as a critical element in global geopolitical relations in the context of energy, including relations with Russia in these complex times such as the war in Ukraine.

As can be seen in the figure above, Turkey is strategically positioned as a transit hub where interregional pipelines converge to transport oil from the Caspian region to the Mediterranean port of Ceyhan,⁹ as well as gas to the European network through the Dardanelles. In addition, Russian gas transits the Turkish Black Sea area through the TurkStream, supplying the southern European markets. It should also be remembered that in 1997, Russia and Turkey started up the Blue Stream pipeline, which came into operation at the beginning of 2003, supplying Russian gas to the Turkish market. A supply that Europe, together with the United States, is trying to cut off in some way because of the war in Ukraine and the sanctions imposed on Russia.

In this complex geopolitical context of the Eastern Mediterranean, the problem of gas distribution to Europe arises, where important geopolitical changes have taken place since the war in Ukraine, particularly in the south of the continent, in the countries bordering the Mediterranean, especially Spain and Italy.

In this context, Italy has benefited for two reasons: firstly, by strengthening new commercial ties with Algeria, and secondly, because of its strategy about gas in the western Mediterranean, thus becoming the real gas hub for central Europe, leaving Spain in a limited position. An aspect that introduces us to the European geo-economy of energy, where, in the absence of a global European policy, the members of the European Union compete against each other.

And this is where the EastMed-Poseidon¹⁰ pipeline, depicted in Figure 13, comes into play, becoming a direct interconnection between gas supply sources and European markets. A strategic European project, based in Italy, which is confirmed —as indicated by its sponsors— technically feasible and economically competitive. The EastMed-Poseidon project is promoted by the Italian company Edison through IGI Poseidon, a 50/50 joint venture with the Greek company DEPA International Projects. EastMed-Poseidon is also designed to transport hydrogen, a key element of Europe's energy transition. Additionally, IGI Poseidon is involved in the construction of the IGB gas pipeline, which has become operational in 2022 connecting Greece and Bulgaria.

The EastMed pipeline, with a planned length of 1,900 km and capacity to transport 10 billion cubic meters of natural gas per year from Cyprus and Israel to Europe via Greece, was included in November 2021 as a project of common interest of the European Union. Regardless of some detractors for its environmental impact (according to some of its environmentalist opponents), this project makes Italy the European hub of reference in the transport of gas from the eastern Mediterranean fields and even gas from Turkey, which places Italy in a privileged position in the European energy context.

By way of conclusion regarding gas in the eastern Mediterranean, the following ideas can be considered:

- Exploration in the Eastern Mediterranean makes Israel, Cyprus, and Egypt important potential suppliers of natural gas in Europe, although they do not negate the need for other traditional sources.
- Jordan, although a minor country economically, is emerging as an ally of Israel, which has geopolitical consequences in the Middle East.
- Russia behind Turkey, with its military presence in Syria, will (depending on the evolution of the war in

⁹ The port of Ceyhan is the Mediterranean terminal of the pipeline linking Baku, Tbilisi, with Ceyhan, which transports crude oil from the Caspian Sea through Azerbaijan and Georgia to Turkey from the northeast.

¹⁰ EastMed-Poseidon Project. <https://www.edison.it/en/eastmed-poseidon-project>

Ukraine) be an essential geopolitical element to take into account.

- Italy is the European country that is betting most strongly on becoming Europe's gas energy hub and is entering fully into the geopolitical and geoeconomic gas game. Europe will end up opting for this solution.
- Turkey will be the essential element in the distribution of gas from Central Asia and even from Russia to Europe. The United States does not seem to have any interest in the new geopolitics being designed in this area.

5. Europe's Energy Trilemma

The World Energy Trilemma is a study conducted by the World Energy Council (2022) that considers three essential elements in the energy make-up of each country: energy security, energy equity and environmental sustainability.

According to the twelfth edition of the World Energy Trilemma, which we consider in these pages, it warns about the current situation indicating that the world is in a scenario of unprecedented energy crisis, as well as immersed in other shocks that are intertwined with energy, causing cascading clashes that affect energy security, the accessibility of energy sources impacting sustainability policies including the effects of climate change in all regions of the world.

Simply stated, energy security reflects a nation's ability to reliably meet its energy demands. Energy equity indicates a nation's ability to provide itself with affordable energy access at competitive prices, enabling it to supply energy efficiently for domestic or industrial uses. And environmental sustainability refers to a country's ability to manage a reasonable transition in combining its energy needs with the requirement to mitigate environmental damage and climate change impacts.

It is surprising that, regardless of the problems of lack of primary energy sources in Europe, eight European countries are in the top 10 of the energy security

Trilemma Index, behind Canada and the United States, which occupy the top two places in the table. These are: Finland, Sweden, Czech Republic, Germany, Latvia, Hungary, Austria, and the United Kingdom. It is equally astonishing that Germany is in position 6 when 31.4 % of the country's electricity generation in 2022 was supported by 20.1 % lignite and 11.3 % hard coal.¹¹ The Baltic countries, such as Sweden and Finland, have a low percentage of natural gas in their energy mix. However, they support their energy systems with nuclear, hydro and biomass generation. Finland, for instance, in 2022 was highly dependent on Russia, importing around 70 % of its gas needs, although it currently has the United States as its largest supplier, having terminated its contract with Gazprom.

As mentioned above, the Energy Equity dimension assesses a country's performance in providing reliable access to affordable energy. Energy affordability is determined by a combination of energy prices and broader socioeconomic improvements. There are only three European nations in the top ten: Ireland (rank 6), Switzerland (rank 7), and Norway (rank 10).

Good Energy Equity performance is directly correlated with strong socioeconomic indicators such as GDP per capita or the UN Human Development Index, creating a virtuous circle of improving economic prosperity and quality of life where abundant, reliable, and affordable energy is taken for granted and energy policies and investment are aligned to maintain this expectation. It is then surprising how in this case European countries are not among the first ones, whose positions are occupied by countries such as Qatar, Kuwait, UAE (United Arab Emirates), or Oman. Something is happening in Europe that needs to be analyzed in more detail. And although the rise in global wholesale commodity prices, which led to higher energy prices for many countries, has not been factored directly into the index, the problems associated

¹¹ Statista (2023). <https://www.statista.com/statistics/736640/energy-mix-germany/>

with inflation lead, for example, to lower index scores, which obviously hurts Europe's position.

As noted, environmental sustainability measures the performance of a country's energy system in terms of environmental avoidance and climate change mitigation. It considers energy resource efficiency, carbon dioxide and methane decarbonization, and air pollution. In this case, the greenhouse gas reduction policy and the various directives incorporated into the legislation of the member countries of the European Union have led to the fact that seven of the top ten countries in this index are European nations.

Although the energy trilemma is not directly related to energy geopolitics, given that it considers three aspects intimately related to global geopolitical impacts, we believe it should be included as an additional element of study in relation to global energy conflicts, since it places the different countries according to their strategic energy positions.

6. Final thoughts

Energy geopolitics as we are considering in this paper is the crossroad between international politics, public and private economic strategies, and energy security.

Some authors explain that energy geopolitics is mainly based on give and take (tit-for-tat, they say), although aggressiveness and dominance are often prevalent in relationships. Globally, energy geopolitics involves a complex number of interrelationships between different countries. These interrelationships occur at different levels. One of them has to do, as we have pointed out, with the countries that need energy in large quantities for their economic growth, and those that can provide sufficient energy resources to them, particularly in the case of hydrocarbons.

However, even if nations possess abundant energy sources, external factors often influence these interrelationships. The situation between Russia and the European Union exemplifies this, where Europe, in response to Russia's unlawful invasion of Ukraine, felt

compelled to diversify its energy sources. This shift has spotlighted the potential of the gas reserves in the eastern Mediterranean. The fact that Russia, once Europe's primary gas supplier, is witnessing diminishing significance in this role underscores this transition.

Overall, although considerable efforts are being made to incorporate renewable energies, hydrocarbons and coal continue to predominate. In the case of wind power, for example, electricity generation has increased almost fourfold in the last decade, from 220.1 gigawatts to 824.9 gigawatts. Even so, as we have said, it is not globally significant. However, in this chapter as in others, China is the champion of wind energy. It was, for example, who drove global orders for wind turbines to a new record in 2022. A year in which China, according to Wood Mackenzie (2023), invested over \$ 72 billion, totaling 70 % of the total turbines order in 2022 worldwide.

According to BP's analysis, the proportion of fossil fuels used as primary energy, which was 80 % in 2019, would be reduced to 30-20 % in 2050 in the event of implementing what BP defines as an Accelerated strategy or Net Zero strategy. A decline that, if applied, should be based on the elimination of coal from the global energy system and a sharp drop in oil demand. Natural gas, on the other hand, will be maintained, but at lower levels.

These trends toward a lower-carbon fuel mix in primary energy are less pronounced in a third analysis that BP calls New Momentum. Fossil fuels will still account for about 60 % of all primary energy in 2050, while renewables will account for about one-third. And this is another geopolitical element to consider, as advanced economies such as the European Union or the United States promote the use of renewable energies, not only as a means to combat the effects of greenhouse gases and climate change, but also to effectively combat the other essential strategic energy element: energy security.

In this regard, as announced by The White House on September 15, 2022, the Biden-Harris Administration is launching coordinated actions to develop new floating offshore wind platforms, which directs the United States

to lead the way in offshore wind energy. These clean energy investments aim to deploy 30 gigawatts (GW) of offshore wind energy by 2030, enough to power 10 million homes with clean energy, support 77,000 jobs and stimulate private investment throughout the supply chain.

From a global perspective, the geopolitical situation of energy will be crucial for the world economy in the coming years and will be the cause of new conflicts and new strategic alliances that will end up having repercussions on environmental policies, which are also subject to geopolitical and, of course, geoeconomic considerations. In the European case, this situation will have repercussions on the various international relations within and outside Europe, as well as on the economy of the European space, where the war in Ukraine will be an essential element to be considered once it is over.

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