Navigating Dual Emergencies: Reassessing European Policy in the Era of Energy Insecurity and Climate Change

Barkat Hussain
University of Peshawar
*** Correspondence**: Barkat55@gmail.com

Citation | Hussain. B, "Navigating Dual Emergencies: Reassessing European Policy in the Era of Energy Insecurity and Climate Change", MCCSS, Vol. 5 Issue. 2 pp 93-109, April 2026
Received | March 05, 2026 **Revised |** March 18, 2026 **Accepted |** March 26, 2026 **Published |** April 03, 2026.

The convergence of energy insecurity and climate change has created unprecedented challenges for Europe, requiring policymakers to reassess existing energy and environmental strategies. This study examines the effectiveness of European policy responses to simultaneous energy and climate crises, focusing on the balance between energy security, economic stability, and long-term sustainability goals. Through a comprehensive review of recent policy frameworks, energy market developments, and climate initiatives, the research analyzes how geopolitical tensions, supply chain disruptions, and fluctuating energy prices have influenced policy decisions throughout Europe. The study highlights the tensions between short-term emergency measures, such as increased fossil fuel utilization and energy subsidies, and long-term commitments to decarbonization and renewable energy transitions. Findings suggest that while crisis-driven interventions have enhanced energy resilience, they have also exposed structural weaknesses in existing policy frameworks. The paper argues for an integrated and adaptive policy approach that strengthens energy independence, accelerates renewable energy deployment, promotes technological innovation, and ensures climate objectives remain central to future energy planning. The research contributes to ongoing debates on sustainable governance and provides recommendations for building a more resilient and climate-conscious European energy system.

Keywords: European Energy Policy, Energy Crisis, Climate Change, Energy Security, Renewable Energy

Introduction:

Starting back in February 2022, Russia's armed invasion of Ukraine has escalated into a bloody, protracted war of attrition that is consuming more and more resources from the growing North Atlantic Treaty Organization (NATO), whose members are investing billions in both their own and Ukraine's armed forces [1]. Additionally, Russia is subject to severe economic sanctions from the West. These sanctions and the fighting have both caused worldwide food and energy supply systems, which put tremendous strain on the world economy overall, especially on nations in the global political south.

The states of the European Union (EU) have suddenly realized how dependent they are on Russian imports of fossil fuels. The EU is imposing more sanctions on Russian fossil fuel imports in an effort to deny Putin's government access to the main source of funding. The geography of the EU consensus on such decisions is not uniform; Hungary, Slovakia, the Czech Republic, and Bulgaria are lobbying against an EU oil embargo out of fear of severing their ties to Russia, while Poland asserts that it can guarantee oil supplies to the entire region through its ports [2].

By importing more fossil fuels from other petrostates and constructing new infrastructure for this reason, several European states are rushing to distance themselves from Russian energy imports, thereby undermining their climate goals [3][4]. Alongside the growing

repercussions of the climate breakdown that are already being felt by the most affected individuals and regions of the world, there is a renewed push to boost the extraction of fossil fuels in order to cover the gaps in the energy supply. In this sense, the war's repercussions are affecting not just the EU production system but also the global economy and interstate system.

In actuality, all political and economic spheres are being impacted by the conflict between Russia and Ukraine. Therefore, the best way to anticipate possible peace solutions is to adopt a systemic perspective that combines political economy and economic policy. With an emphasis on the role of EU energy policy, the study attempts to construct a critical political economics analysis of the current collection of interconnected challenges. In order to achieve this, we apply the world systems analysis theoretical framework to a set of quantitative and qualitative data that includes both historical developments and current events. We do this by taking a broadly historical approach and combining interpretive tools from the fields of political science and economics.

We offer three main interpretations of the current conflict that are complementary, mutually consistent, and not exhaustive: (i) it is a geopolitical struggle between Russia and the core EU members over access to cheap energy sources and the ability to extract an economic surplus from the peripheral members of Eastern Europe through trade; (ii) it is an attempt by the Russian petrostate to maintain the economic foundation of its regime, which is threatened by the possibility of a low-carbon transition in Europe; (iii) it is an indication of the vulnerability that the EU has partially exposed to and partially exported to its Eastern periphery by adopting a haphazard and self-centered approach to energy and climate policy. Thus, all three viewpoints on the current issue revolve around the politics of energy.

Due to its simultaneous location on both Russia's and the EU's periphery, which serves as a de facto route for Russian energy exports to Europe, Ukraine is at the center of this dispute. Due in part to its abundant energy and mineral resources, as well as its fertile soils, the nation has been the center of the conflict between these two power blocs for many years. Geographically, it serves as a transit nation for the movement of various raw commodities between the East and the West, making it a significant market for both Russia and the EU.

Nonetheless, Ukraine's place in the global system is not essentially different from that of other nations in Central Asia or on the eastern edge of Europe. In a similar vein, Russia's geopolitical position may be similar to that of other Petrostates like Saudi Arabia or Nigeria [5]. In order to lower the likelihood of future transnational crises, it is crucial to comprehend this dispute in order to derive more general lessons for the EU's energy policy at the intersecting aims of geopolitical stability, energy security, and the prevention of climate catastrophe.

The Russia-Ukraine Crisis Using the World Systems Analysis Framework:

The Types of Vulnerability and the World Systems Analysis:

The greatest method to comprehend world systems analysis is through its theoretical framework, the international relations and global political economy as a core-periphery constellation of "combined and dependent development" [6]. This framework's central idea is that the industrial "core" of the global system exports environmental instability while extracting an economic surplus in the form of embodied energy, land, labor, and raw materials from the extractive "periphery" through unequal exchange [7][8]. The polities of the core are able to establish some level of internal socioeconomic order and security thanks to access to this surplus. This happens at the expense of the periphery, which is more susceptible to external economic shocks and has less political stability due to its extractive political economy.

By shifting instability and vulnerability to the periphery, the industrial core of the global system can thereby improve its own socioeconomic stability [9]. on the current environment, Western Europe, a key component of the global capitalist system, has been attempting to increase its control over export markets on its Eastern European periphery as well as the supply of energy, resources, agricultural land, and inexpensive labor. Large portions of this Eastern

periphery, such as Poland, Hungary, the Czech Republic, Slovakia, and portions of the Balkan and Baltic states, were incorporated into the EU by the European core, initiating this process. These states hold a unique location that is best characterized as the EU's internal perimeter. Due to their lack of EU integration, other regions of Europe's Eastern periphery, such as Moldova and Ukraine, are even more disadvantaged in comparison to the EU core.

"Semi-peripheral" nations, which are situated between the core and the periphery, fight to gain some autonomy from the core and authority over their own perimeter. In the global economy, Russia holds such a semi-peripheral position [10]. Although semi peripheral nations—such as Brazil, South Africa, Turkey, and Saudi Arabia—are somewhat reliant on resource exports to the core, they can occasionally contest its hegemony in specific regions. Access to and control over inexpensive sources of energy, land, labor, raw materials, and ecological sinks are the main drivers of surplus extraction in the capitalist world economy, making them significant targets of international competition and conflict [11]. States work to maintain the Ecologically Unequal Exchange (EUE) of these resources through trade structures [12][13]. According to the EUE theory, underdevelopment and environmental degradation occur in the peripheral [14] as well as rapid economic growth in the core [15] due to the unequal flow of resources from the periphery to the core and the diverging compensation. Table 1 and 2, which display the energy embodied in all net imports and exports per capita and the trade-in value added per unit of energy embodied in exports in 2015 from the Eora26 multi-regional input-output model, demonstrate that energy is a major driving factor of an EUE [16].

Western Europe's core status, Russia's semi-peripheral status, and the presence of a post-Soviet periphery in Eastern Europe and Central Asia are all depicted on both maps. The disparity in the distribution of surplus and the reliance of the core and (semi-) periphery Cross-border energy flows frequently result in unevenly distributed political and economic risks. We track the emergence and dispersion of three types of vulnerability:

Table 1. Types of vulnerability identified through World Systems Analysis

Vulnerability Type	Description
Political Vulnerability	Ability of governments to maintain legitimacy and social stability
Energy Vulnerability	Dependence on external energy supplies and exposure to supply shocks
Climate Vulnerability	Exposure to climate change and ecological degradation

(i) The capacity (or lack thereof) of a government to uphold legitimacy by resolving social disputes and fostering consent; (ii) The social and economic instability that depends on having access to a reliable energy source; and (iii) The exposure to the direct consequences of the climate and more general ecological crises.

The first vulnerability usually relates to the core states' ability to disperse the surplus taken from the periphery while maintaining the minimal level of popular consent and class compromise necessary for liberal democracy. In states that are semi-peripheral, the Elites receive the surplus, which is enough to keep an authoritarian regime stable. Peripheral governments are unable to adopt any of these two models of regime stabilization in the absence of such a distributable surplus, and they usually face more dispute over state authority [17]. The second kind of vulnerability stems from the fact that core states maintain their bilateral trade agreements with semi-peripheral Petrostates by using their political and economic clout. As a result, they gain from a more diversified energy provider base, a more secure energy supply, and a decreased susceptibility to external supply shocks. Petrostates, on the other hand, can take use of their favorable position as nations that export energy and are solely susceptible to shocks to external demand. Peripheral states are frequently characterized by a concentrated mix of sources and providers and a high susceptibility to external supply shocks because they lack such favorable bargaining positions and are unable to adhere to either of these two models. The immediate consequences of the climate and more general ecological crises are the third cause of vulnerability. The core benefits more from greenhouse gas (GHG) emissions than the periphery,

which is asymmetrically more sensitive to the effects of climate change [18]. This is an example of an ecologically uneven exchange. Furthermore, the overuse of the core's environmental space increases the periphery's susceptibility to ecological effects [19] and reduces resource use and consumption there [20]. A thorough grasp of the historical causes of the Russia-Ukraine crisis and the current distribution of weakness in political stability should be added to these types of vulnerability as they are interpreted through the lens of the EUE framework in order to inform the EU debate on how to design the future for resolving the international political impasse [21].

Where and When Does Vulnerability Start?

Modern civilizations' reliance on high energy consumption, particularly in the manufacturing and service sectors, is a major factor in the rise of vulnerability.

The majority of core economies need on cheaper imports from abroad to maintain industry profitability, high levels of consumer consumption, and sustained economic expansion since they are unable to provide the necessary energy domestically at sufficiently low rates [22]. Beginning in the early 1970s with the oil crises, this vulnerability is widely understood in policy discussions as an issue of energy security. EUE theory contributes to this discussion by demonstrating how core nations and sectors economically exploit semi-peripheral energy exporters.

The majority of Russia's fossil fuel exports go to Europe, making it the top exporter in the world. With oil, gas, and coal exports accounting for 25% of GDP and 45% of the federal budget, the Russian government is heavily reliant on these sources of income [23]. As seen in Table 1, suchsignificantly higher when taking into account the energy contained in its industrial exports. This is consistent with a petrostate's usual social structure. Internal, these regimes tend toward an authoritarian paradigm based on elite (rather than widespread) agreement of the governed, while externally, they usually rely significantly on military force [24].

Table 2. Dependence of the Russian economy on fossil fuel exports

Indicator	Value (%)
Share of GDP from Fossil Fuels	25
Share of Federal Budget Revenue	45
Share of Exports from Oil & Gas	42
Share of Oil & Gas Exports Going to EU	50

Since both Russia and Eastern Europe are net exporters of energy, food, and resources with comparatively lower labor costs and less complicated economies, their economic positions are comparable to those of Western Europe. More significantly, over the past ten years, Russia's proportion of the world GDP has been cut in half, significantly diminishing the likelihood that these semi-peripheral states can ever attain core status [25][26]. However, historically, Russian economic might was predicated on dominating its own periphery in Central Asia and Eastern Europe. Since the fall of the USSR, this control has been reduced, especially by NATO's eastward advance. As a result, ultranationalist ideology and the Russian regime's neo-imperial revisionism have emerged as a result of Russia's decline in economic significance on a global scale and its loss of control over the Eastern European (now semi-) periphery [27]. This ultimately led to Russia's invasion of Ukraine [28]

Where and When Does Vulnerability Start?

Modern civilizations' reliance on high energy consumption, particularly in the manufacturing and service sectors, is a major factor in the rise of vulnerability. The majority of core economies need on cheaper imports from abroad to maintain industry profitability, high levels of consumer consumption, and sustained economic expansion since they are unable to provide the necessary energy domestically at sufficiently low rates. Beginning in the early 1970s with the oil crises, this vulnerability is widely understood in policy discussions as an issue of

energy security. EUE theory contributes to this discussion by demonstrating how core nations and sectors economically exploit semi-peripheral energy exporters.

The majority of Russia's fossil fuel exports go to Europe, making it the top exporter in the world. With oil, gas, and coal exports accounting for 25% of GDP and 45% of the federal budget, the Russian government is heavily reliant on these sources of income [23]. As seen in Table 1, such figures are significantly higher when taking into account the energy contained in its industrial exports. This is consistent with a petrostate's usual social structure. Internal, these regimes tend toward an authoritarian paradigm based on elite (rather than widespread) agreement of the governed, while externally, they usually rely significantly on military force [24].

Since both Russia and Eastern Europe are net exporters of energy, food, and resources with comparatively lower labor costs and less complicated economies, their economic positions are comparable to those of Western Europe. More significantly, over the past ten years, Russia's proportion of the world GDP has been cut in half, significantly diminishing the likelihood that these semi-peripheral states can ever attain core status [25][26]. However, historically, Russian economic might was predicated on dominating its own periphery in Central Asia and Eastern Europe. Since the fall of the USSR, this control has been reduced, especially by NATO's eastward advance. As a result, ultranationalist ideology and the Russian regime's neo-imperial revisionism have emerged as a result of Russia's decline in economic significance on a global scale and its loss of control over the Eastern European (now semi-) periphery [27]. This ultimately led to Russia's invasion of Ukraine.

Ukraine is the biggest nation on both the western and eastern borders of Russia and Europe. Exports of iron, cereal, and seed oil are vital to its economy. In addition to its rich agricultural area, it contains a wealth of resources, including coal, natural gas, oil, and other vital minerals needed for digital technology and renewable energy, as well as substantial hydropower and biomass potential. Additionally, it exports steel and other metal goods that contain significant amounts of energy, most of which were initially imported from Russia. Because of this, Ukraine has an energy intensity that is higher than the OECD average and is among the top ten most energy-intensive nations in the world [29]. Ukraine is the nation with the greatest natural gas transits in the world and one of Europe's biggest energy markets due to its enormous population, high energy consumption, and geographic location. At the same time, Ukraine's physical location makes it a site of intense rivalry between Russia and the EU over ecologically unfair trade. In this case, Hirschman's theoretical method appears to be more applicable than ever: asymmetry gives the stronger power, compelling the smaller power to align with the stronger's objectives [30]. As a periphery nation, Ukraine was caught between two fires in this instance. On the one hand, the EU, a central component of the global system, has exploited its role in the energy market with the promise of greater integration and economic support, delaying and never guaranteeing sufficient protection, while Russia, a semi-peripheral petrostate that has historically dominated Ukraine until recently, used its energy and economic power to include it in its own arrangements.

Ukraine as a Node of In-Between Energy in EU-Russian Relations:

The Energy Chain Between the EU and Russia:

The Soviet Union and Europe's energy relations date back to the late 1950s, including the construction of gas and oil pipelines. The establishment of an energy conversation between the two countries in 2000 marked the culmination of Russia's integration as a major energy provider into the European semi-periphery, which started in the late 1990s [31].

The EU was largely unconcerned with energy security and its reliance on Russian fossil resources in the first ten years of the twenty-first century [32]. Despite this widespread worry, the majority of laws and policies in recent decades have been focused on trade deregulation, liberalization, and free market mechanisms, which has effectively increased the relative ease of investing in less expensive Russian energy sources [33].

Following the EU's 2004 enlargement process, Western Europe had more access to low-cost imports of embodied labor and energy, many of which were predicated on the fuller integration of areas of the Eastern periphery into the liberalized common market purchases of gas from Russia [34]. Core Western states used their negotiating power within the EU to maintain bilateral trade agreements with Russia, improving their position in the EUE hierarchy by negotiating for relatively low energy prices while guaranteeing preferential supply channels, while many of the new post-Soviet EU members were already worried about their high reliance on energy imports. As a result, the newly connected Eastern periphery was primarily affected, although the risk remained high for the entire EU [35].

The external threat posed by the gas conflict between Russia and Ukraine in 2006 and the real possibility of a gas cutoff compelled the EU to modify its energy security strategy [36]. This 2004 wave of upheaval also had an impact on Ukraine, which saw more open forms of confrontation for the first time following ten years of a contentious but consistently pro-Russian policy.

In opposition to Russia's economic concessions to incorporate Ukraine into its periphery, Ukraine turned toward the EU and NATO as a result of the "Orange Revolution" and the triumph of a pro-European party in the presidential elections.

For years, Russia, in particular, had been lowering the costs of its gas and the corresponding transit taxes for Ukraine below those of Europe and the rest of the globe. Following 2004, Russia started applying economic pressure on Ukraine and other periphery nations to increase petroleum costs.

(Lithuania, Latvia, Moldova, Georgia, and Estonia). Supplies to Ukraine were reduced in response to Ukraine's reluctance to pay these increased costs, with the caveat that gas exports to the European core would remain unaffected. However, the entire EU quickly felt the decline in delivery volumes. supply from Austria, Slovakia, and Romania decreased by 33.3%, France by 25–30%, Italy by about 25%, and Poland by 14%. Hungary lost up to 40% of its supply. The European outrage prompted the Russian government and Gazprom to come to a temporary arrangement with Ukraine, thus the situation did not endure long. The agreement's wording, however, makes clear that a number of problems remained unsolved, most notably the cost of gas [37][38].

This marked a turning point for the EU as well since it realized how vulnerable it was to disruptions in the external energy supply and how ineffective its previous energy security measures had been. Due in part to this, the EU presented the 2030 Framework on Climate and Energy in 2014, which aims to reduce greenhouse gas emissions by 40% (from 1990 levels), increase energy efficiency by at least 32.5%, and include 32% of energy from renewable sources [39]. The variety of suppliers and the improvement of member state connections and coordination were the main focuses of this updated energy package's rise in energy security. The discussion of an Energy Union surfaced shortly after the 2030 energy agenda was presented as the path ahead for a cogent energy security strategy inside the EU. The "Framework Strategy for a Resilient Energy Union with a Forward-Looking Climate Change Policy" [40] was the final version of it. The already tense relations between Russia and its energy-importing partners are also at risk as a result of the EU's considerable influence on international negotiations about climate and energy concerns. A compromise between the state and the oligarchy, which is structurally dependent on fossil fuel income, is the essential basis for the stability of the Russian economy. The decarbonization goals of the Paris Agreement, which call for a rapid phase-out of fossil fuels and an immediate reduction in the global exploitation of fossil fuel reserves in the absence of practical large-scale carbon removal technologies, have undermined this foundation in recent years. Simultaneously, a significant portion of the previous EU decarbonization strategy was based on the shift to widespread usage of natural gas, which is purportedly less harmful to the climate than its alternatives, coal and crude oil.

Digging beneath the Surface:

Ukraine in between Based on the evolution of EU-Russian energy relations, one aspect of the background against which Russia invaded Ukraine is the paradoxical situation that, although it can rely on Europe's reliance on its supply over the coming years, it can no longer count on the stability of Europe's demand for its fossil fuels after the 2030s. Since As was previously said, significant amounts of Russian gas were anticipated in the EU's energy mix in all transition scenarios. Although Europe's heavy reliance on Russian natural gas was seen as a threat to energy security, the continent's ongoing reliance on fossil fuels was uncontested. Large pipeline projects like Nord and South Streams showed that the EU was still eager in expanding its energy ties with Russia and in fossil fuel usage. Recent advancements, however, show a departure from the haphazard strategy to successfully lower fossil fuel consumption. With the European Green Deal and the more recent Fit for 55 package, the EU sought to become the first carbon-neutral continent in response to pressure from the global climate justice movements to fulfill their obligations [41][42]. The phase-out of conventional gas was intended to reduce gross inland consumption to 22% in 2030 and 9% in 2050 as part of this updated climate and energy plan. As a result, the Russian economy is on pace to disappear as a share of the global GDP due to its reliance on fossil fuel exports and the declining demand for natural gas from its main trade partner in the upcoming years. This has to do with the second internal factor. Let's say Europe is committed to achieving net zero carbon emissions by 2050. Given that the production costs of Russia's aging oil resources are often greater than those of West Asia, Russia will not be among the last fossil fuel sources to be abandoned. Only one-third of Russia's confirmed reserves will be profitable to extract at the current price level. The Energy Return On Investment (EROI) of fossil fuels, which indicates how many units of energy are needed to produce one more unit of energy, can be used to describe the underlying physical mechanism. The EROI of gas has been decreasing in recent years, from 1:84 in 2015 to 1:83 in 2008 to 1:74 in 2016, despite the Russian fossil industry's efforts to advance technology. This poses a serious political risk to Russia's economic and political stability since the EROI has been found to be the biggest predictor of the expansion of the gas industry and, in fact, of Russian GDP. Furthermore, Russia has not made significant efforts to increase the production of renewable energy as a workable substitute for the decline in export rents resulting from the exploitation of finite resources, in contrast to other petrostates. It will be difficult for Russia to replace the EU with other importers in the natural gas trade if all transition pathways to meet the goals outlined in the Paris Agreement require a rapid phase-out of fossil fuel combustion and net zero pledges by more than 130 countries, collectively responsible for about 88% of global carbon emissions. The combination of declining prices and increased uncertainty poses a fundamental threat to Russian fossil capital and, consequently, the entire political economy of the Russian state, even though demand from Asia and other regions may partially offset Europe's diminishing demand for fossil fuels.

We can create a clear picture of the conflict's escalation in Ukraine thanks to the factors covered here. Facing the possibility of a long-term decline, Russian fossil capital and the related regime are currently reducing their losses by taking use of the brief window of opportunity that the post-pandemic healing phase offers. During the recovery from the 2020 production collapse, European businesses' need for readily available energy sources coincided with a sharp increase in the price of fossil fuels on global markets, resulting in skyrocketing additional earnings from Russian energy exports. It is obvious that the use of fossil fuels in Europe affects the Russian state's ability to negotiate in international disputes. In light of this, it is evident that the EU's credible commitment to abandoning fossil fuels and its reluctance to move quickly enough to become independent of Russia have made the Russian invasion of Ukraine conceivable. Imagine a counterfactual situation if the EU had previously taken significant steps to stop using fossil fuels in the 1990s. It would have implemented more sustainable provisioning methods and

renewable energy while dramatically reducing its use of fossil fuels. This would have prevented large sums of money from going to the fossil fuel complex, which helped stabilize and radicalize Putin's dictatorial administration, and given the European core and periphery much more negotiating power with Russia. In this case, the Russian government, deprived of fossil fuels, might have chosen a different, and most likely less forceful, strategy for strengthening its national authority.

The Future of Energy Security in the EU:

Energy Security:

Instead of healing its wounds, Europe is licking them:

The EU's energy mix must be taken into account in order to assess the overall level of energy security. The percentage of gas, oil, coal, nuclear, or renewable energy in gross available energy—the total amount of energy used for all activities on the nation's territory—is known as the energy mix. The EU energy mix in 2020 is shown in Table 3. It shows how much the EU still depends on fossil fuels like oil and natural gas, but it also provides an overview of how far the sustainable transition has come based on the proportion of renewable energy in the energy mix.

Table 3. Composition of the EU energy mix in 2020

Energy Source	Share (%)
Oil	Largest Component
Natural Gas	Largest Component
Renewables	17.4
Nuclear	Declining
Coal	Remaining Share

Table 4. EU dependence on imported energy

Indicator	Dependency (%)
Total Energy Imports	60.7
Oil Imports	97
Natural Gas Imports	90
Share of Energy from Russia	25

The EU has not been able to lessen its overall reliance on oil and natural gas, according to data from Eurostat. Natural gas and oil continue to be the most common energy sources, even if the proportion of renewable energy has grown and that of nuclear power has declined, biggest constituents, accounting for about 60% of the total energy mix. Only 42% of the EU's total gross available energy in 2020 came from local production; the remaining 58% came from imports, with about 25% coming from Russia. This means that the EU imports nearly all of these fossil fuels.

Additionally, EU policy has not been able to considerably raise the proportion of renewable energy in the energy mix. The ambitious energy packages approved in 2009, which intended for a share of 20% renewables by 2020, are partially not being met by the current 17.4% share. Furthermore, considering the present investment trajectory, it appears implausible that the EU's targets of a 40% share of renewables by 2030, which are part of the Fit for 55 package, will be met. It appears improbable that the EU will be able to meet any of its goals by 2030 unless significant changes take place in the following years. Last but not least, these figures are entirely consistent with the significant bilateral fossil fuel trade agreements that the EU core and strong petrostates, such as Russia, established in order to guarantee an energy supply at reasonable costs, as previously mentioned. Given the price competition between natural gas and renewables, particularly in the production of electricity, the anticipated benefits in terms of supply security have been one of the main reasons for the delay in rerouting large investments toward renewable sources.

In connection with this, the EU's reliance on imports also merits consideration. It draws attention to how much a nation depends on imports to meet its energy demands.

According to Eurostat, the EU's overall reliance on energy imports in 2019 was 60.7%, with 90% for natural gas and 97% for oil, resulting in one of the highest levels of net import dependency in the previous 30 years. These numbers reflect the EU's conflicted place in the global system. On the one hand, it maintains high living standards and profits from the ecologically uneven exchange as a net importer of energy. However, the EU is susceptible to external shocks due to its excessive reliance on imports and concentration of energy suppliers. In 2019, the EU imported 46% of its hard coal, 27% of its crude oil and NGL, and 41% of its natural gas from Russia. In stark contrast to the EU's energy security plan, which aims to lessen its vulnerability to external shocks, Eurostat Energy Balances reports that this dependency trend from Russia has further worsened over the previous 20 years. Therefore, a concentration of suppliers and sources continues to define EU energy security, with Russian fossil fuels continuing to be the cornerstone of European prosperity. More significantly, Table 4 depicts the internal peripheral and core divisions inside the EU.

The core member states have been using their economic clout to negotiate more favorable bilateral energy trade agreements, while the periphery is keen to reduce its reliance on Russian energy imports due to national security concerns. While core members have a far more varied mix of suppliers, Europe's periphery depends significantly more on imports from Russia for both natural gas and oil (Finland, Lithuania, Latvia, Estonia, Slovakia, Bulgaria, and the Czech Republic rely on Russian gas with at least 85% of their domestic natural gas consumption). Compared to the majority of the peripheral EU countries, core members like Spain, Portugal, France, and, more lately, Italy, have a far more varied approach to energy imports.

Table 5. EU dependence on Russian fossil fuel imports

Energy Commodity	Share Imported from Russia (%)
Natural Gas	41
Crude Oil & NGL	27
Hard Coal	46

Table 6. EU member states with highest dependence on Russian gas

Country	Dependence on Russian Gas (%)
Finland	≥85
Lithuania	≥85
Latvia	≥85
Estonia	≥85
Slovakia	≥85
Bulgaria	≥85
Czech Republic	≥85

The Eastern periphery is comparatively less equipped to prevent disruptions in the influx of energy and deal with their consequences due to weak negotiating strength, unstable trade agreements, and inferior fiscal capacity. The first EU members to experience the end of Poland and Bulgaria supplied Russian petroleum throughout the summer of 2022. Furthermore, core countries outbid Eastern EU nations with more fiscal room, especially Germany, in order to replace Russian fuels and stabilize energy costs through subsidies, which puts significant strain on governments' balance sheets. Additionally, food prices have skyrocketed globally due to the ongoing conflict in Ukraine. People in the Eastern Periphery of the EU have been most severely impacted by the sharp price increases. The reluctance of core members to effectively commit to a unified approach with regard to external relations has maintained the intra-EU division, which

is asymmetrically felt by the Eastern periphery in terms of higher vulnerability to external energy supply and price shocks, despite the urgency for an Energy Union strategy already discussed in 2015.

Geopolitics: Fueling the Conflict:

The EU is susceptible to supply shocks due to its reliance on Russian energy imports, but Russia is likewise dependent on European demand. In instance, ongoing imports of fossil fuels indirectly affect the Russian state's ability to produce and spend roubles on military operations. The balance of payments is the most important factor for a semi-peripheral nation's fiscal policy space, not the sustainability of public finance in the strict sense. According to Table 5, Russia's exports of fossil fuels accounted for the majority of its consistent current account surpluses between 2000 and 2022.

About 42% of Russian exports are made up of oil and gas, with 50% of those exports going to the EU. Additionally, mineral products make up around 70% of Russia's exports to the EU, with crude oil and refined petroleum making up about 55% and 10% is made up of petroleum gas. Thus, it can be shown that energy exports and, more significantly, energy imports from the EU, which account for a sizable portion of Russia's national income, are the main sources of funding for the country's current account surplus. Since invading Ukraine on February 24, Russia's fossil fuel earnings have risen, with the EU accounting for about half of these earnings. The demand for Russia's ruble is sustained by its ongoing fossil fuel exports. Despite severe sanctions, particularly those imposed on the Russian central bank, this has stabilized the value of the rouble and, consequently, Russia's ability to acquire the supplies needed to wage war. The rouble would only plummet if fuel prices and supply decreased. When combined with the existing sanctions, this would increase the cost of capital-intensive imports and inflation, thereby endangering Russia's political economy and necessitating deflationary changes. This would jeopardize the regime's foundation of public and elite support as well as any remaining class compromise. This is a risky situation, particularly given the large number of armed young male workers. For this reason, the present conflict with Ukraine has been indirectly funded by the EU.

The only thing that would seriously impair Russia's capacity to continue the war would be a decrease in both global demand for fossil fuels and associated prices. 4.3. Climate: Fighting Fire with Fire The Sixth Assessment Report of Working Group III of the Intergovernmental Panel on Climate Change (IPCC) was published three days following Russia's invasion. "Almost half of the world's population is already experiencing the effects of climate change we have one last chance to be climate resilient," stated Svetilna Krakovska, the head of the Ukrainian delegation of climate experts to the IPCC. However, the window of opportunity for action is becoming more smaller, and with this conflict, it is already closing. According to the research, 2030 is an important deadline. The world must reduce emissions significantly before that year, and by 2050, there must be zero net carbon emissions and a sharp drop in all other greenhouse gases.

The EC's Fit for 55 package raises the target percentage of renewable energy in the energy mix for 2030 from 32% (the 2019 aim) to 40%. However, it appears improbable that the EU will be able to accomplish any of its goals unless significant changes take place in the next years 2030. The ambitious energy packages approved in 2009, which called for a share of 20% renewable energy by 2020, are obviously not being met by the current percentage of 17.4%. The figures indicate that for the past 20 years, there has been a partial reluctance to take climate change seriously. The essential shift to a more sustainable energy mix has been postponed in large part by the bilateral fossil fuel trade agreements that granted the EU core states preferential access to inexpensive fuels from Russia and other petrostates. The most recent IPCC report specifically identifies economic expansion as the structural driver of the climate catastrophe and

fossil fuels as its direct source for the first time. In order to reduce the likelihood of a catastrophic climate collapse, fossil fuels must be phased out as soon as possible.

The vast majority of nations have continued to extract and consume fossil fuels, despite decades of scientific evidence to the contrary. In actuality, the war has sped up the mining of natural fuels. If oil, gas, and coal earnings are what keep the Russian state stable, then reducing these revenues would destabilize the Russian military apparatus. However, Western nations contend that switching from fossil fuels to renewable energy sources will not be sufficient to meet the current level of energy demand. The only sensible choice is to switch from Russian fuels to fossil fuels from other sources as long as a change in the amount of energy consumed is not discussed. The EU has been focusing its efforts on exactly this. In order to lessen Europe's reliance on Russian gas, the European Commission introduced the REpowerEU program in March 2022. It intends to spend EUR 195 billion to stop importing Russian fossil fuels by 2027, combining a quicker rollout of renewable energy and energy savings with a switch to alternative gas suppliers and increased use of coal. Hydrogen, at least partially derived from renewable sources, is expected to replace and partially replace gas. However, the aim for the percentage of renewable energy in the energy mix is set at 45% by 2030, which is only a 5% increase over the existing EU climate policy target. Therefore, the strategy still sees Europe as a major importer of fossil fuels and concentrates on finding substitute nations that might serve as the foundation for Europe's future fossil fuel supply.

This strategy is not helpful in stabilizing the climatic situation, let alone the geopolitical or economic spheres. The main reason is that it locks Europe deeper into the fossil age, potentially for decades, and maintains the total demand for fossil fuels in the short term. This issue is made worse by the fact that energy supplies cannot be expanded in the near future without raising emissions, and the implementation of renewable energy sources takes time and energy. Therefore, increasing the extraction of fossil fuels is the only method to rapidly expand supply.

As a result, there are only two options: either more fossil fuels are supplied from North America, West Asia, and other regions, which might lower prices and harm Russia by making it unprofitable to extract the majority of its reserves. But this would result in more emissions, which would have disastrous effects on the climate. The second possibility is that while supply does not increase, some gas and oil from West Asia and other regions is redirected towards Europe, where its previous customers now purchase from Russia. This would enrich Russia and other petrostates while keeping emissions at absurdly high levels by stabilizing or even raising the price of fossil fuels. Large sums of money that could be used for the shift away from fossil fuels would be needed to build infrastructure, such as pipelines and LNG facilities. Paradoxically, the EU intends to sell more emission certificates in order to finance the investments included in the Repower EU initiative.

Table 7. Main objectives of the Repower EU strategy

Objective	Target
End Russian Fossil Fuel Imports	2027
Investment Program	€195 Billion
Renewable Energy Target	45% by 2030
Increase Energy Savings	Yes
Hydrogen Expansion	Yes
Alternative Gas Suppliers	Yes

Conversation:

According to world systems analysis, the economic benefits and geopolitical, economic, and climatic risks associated with trade with Russia are distributed unevenly, favoring the EU core at the expense of the Eastern periphery. The intricate network of international and

intersectoral connections that currently define the global value chain, along with the complex framework of domestic and external sources of vulnerability, make it evident that reconsidering the EU's energy and industrial strategy is a necessary step toward a peaceful conclusion to the conflict. Here, we put aside our thoughts on diplomatic measures and concentrate on the particular measures pertaining to the energy system.

The Requirement to Give Up Fossil Fuels:

The EU's inability to successfully implement policies to secure its energy supply and transition to a zero-carbon economy over the past 20 years has contributed to the persistence of semi-peripheral petrostates, making it susceptible to ecological and environmental damage impacts that are asymmetrically felt by the Eastern periphery. Although world systems analysis and environmentally unequal exchange theory concentrate on the economic exploitation of the periphery, the core is as susceptible to any disturbance in the inflows of inexpensive energy. Crucially, the EU's internal periphery and core are not equally affected by the ensuing vulnerability. The EU's energy mix is still heavily reliant on fossil fuels, its reliance on imports is still quite high, and the concentration of Russian fossil fuels is still high, according to empirical data. The Eastern periphery, which is far more susceptible to shocks to the external energy supply, is primarily affected by the unequal distribution of reliance on Russian gas. Additionally, by stabilizing Russia's federal budget and exchange rate, energy payments, both past and present, have and continue to finance the ongoing conflict in Ukraine.

The geopolitical danger of a protracted conflict or even potential future Russian expansions still mostly affects the periphery of Eastern Europe. Additionally, it is far more affected by the present increase in food and energy prices than the European core, which has far greater GDP levels. Their energy access has never been adequately protected by suitable regulations. Furthermore, the majority of the Ukrainians who were compelled to leave their homeland have been absorbed into Eastern Europe. As of September 20, 2022, almost ten million refugees have fled to Poland, Hungary, Romania, Slovakia, and Moldova.

More broadly, all significant attempts to reduce global warming have been hampered by the conflict. The first step in addressing and attempting to resolve the climate catastrophe is to promote collaboration and peace. Rather, it appears that a return to international power blocs is coming. While NATO members are working together on rearmament and sanctions, the BRICS countries—Brazil, Russia, India, China, and South Africa—are already working more closely together to find ways to get around Western sanctions on the Russian payment system as a result of the sanctions imposed through the dollar system. Significantly, China and India have started using the Rupee, Renminbi, and Rouble as accounting units for bilateral trade with Russia, challenging the monopoly of the global dollar. Effective climate policy is likely to be further delayed by the creation of a bloc of authoritarian leaders, even though a shift to a more multipolar economic world order may or may not be deemed desirable from a critical perspective on world systems. states that are semi-peripheral and have an interest in burning more fossil fuels. This feature also emphasizes a compelling argument for abandoning a global economy predicated on uneven energy flows. Vulnerabilities are likely to continue in all three dimensions if fossil fuel consumption is not drastically reduced. Petrostates will remain trapped in a precarious model of an extractive political economy and will keep looking for ways to take advantage of windows of opportunity to stabilize their unstable power base. High and unstable energy prices are a problem for nations that import energy, which primarily affects poorer nations and their inhabitants. Their reliance on fossil fuels will continue to limit their policy space for measures that promote geopolitical stability. Finally, and perhaps most significantly, the ongoing use of fossil fuels accelerates the deterioration of the planet's climate systems, which leads to further geopolitical and economic instability.

The Requirement to Create Linked Policy Measures:

The several lines of analysis offered here all point to a single, obvious policy recommendation: cut back on fossil fuel consumption as soon as possible rather than substituting foreign fuels with Russian ones. This is essential for boosting social, economic, and geopolitical security as well as, of course, halting climate change.

There are three strategies to fulfill the need to cut back on the use of fossil fuels:

Use renewable energy instead of fossil fuels;

Lower total energy consumption;

Quicken the development, research, and application of novel technologies

Implement strategies that support the first two objectives, which favor social inclusion and equitable distribution of necessities.

The implementation of solar, wind, and heat pumps must be further accelerated in order to hasten the phase-out of fossil fuels. G-7 nations, including significant European core states, could conserve more natural gas than they import by 2025 from Russia. Three sectors provide significant reduction opportunities: buildings, industries, and power generation up to 18%. However, it is also essential to lower total energy consumption because not all fossil fuels can be immediately replaced by renewable energy sources. Both lowering energy costs and achieving climate goals depend on this. A major acceleration of current energy conservation initiatives, including building retrofitting and insulation, as well as industry efficiency initiatives, is one approach to do this.

Although rebound effects may restrict the efficacy of efficiency measures, increasing energy efficiency is a crucial component of the shift. Priority should be given to a framework that aims for energy sufficiency. While lowering the excess energy consumption of wealthy homes and businesses that do not directly support social or ecological goals, governments should guarantee that all households have access to the necessary energy services. Soft, market-based rationing strategies, such as limiting the cost of a specific amount of gas used by each family, may be a useful tool for achieving this goal. Furthermore, environmental psychology research has produced a variety of instruments to encourage self-sufficiency in consumption patterns. Building sustainable public provisioning systems is essential to achieving sufficiency.

A higher standard of living at a lower energy throughput might be possible with accessible public services. To secure a quick transition away from fossil fuels without seriously disrupting vital energy supplies, the state may need to seize control of the fossil fuel sector and energy businesses in addition to providing a variety of sustainable public services.

These actions undoubtedly highlight the capitalist system's inability to accomplish a fair and efficient shift to a different and sustainable form of production. Most significantly, they point to the necessity of overcoming the existing hegemony of neoliberal governance and carefully examining other models of governance, such polycentric democratic planning, as a useful instrument to accomplish such a significant shift.

Alongside these actions, technological and social improvements must be developed and implemented more quickly. There are enormous chances to scale up technology that improve energy independence and efficiency across many industries, including the important areas of mobility and agriculture. The EU should move more quickly to reorient its approach to innovation policy in the direction of mission-oriented innovation.

Even if this means taking resources from and speeding up the Schumpeterian creative destruction of sectors that are less beneficial to society and the environment. Crucially, in order to fully utilize their potential and keep up with the rapidly worsening climate problem, the core will need to share technology more freely with the world system's peripheries and semi-peripheries.

The problem of raising enough money to support such initiatives is crucial. Public funding is the only means to execute many of the essential changes because they are unlikely to be commercially profitable, at least in the short term, given the current market framework. The

climate financing mechanisms offer a number of choices. For instance, the European Central Bank might purchase government bonds to finance the public investments required to lower energy use and boost the availability of green technologies. Furthermore, the EU's recently approved Social Climate Fund, which is part of the Fit for 55 package and the revision of the EU Emission Trading Scheme, may significantly reroute investments toward a just and sustainable transition, lessening the distributive burden of rapid decarbonization among core and peripheral countries, at least at the EU level. Policymakers can employ a range of fiscal and monetary policy instruments to reduce private surplus demand for non-essential activities in sustainable and fairways when increased public spending poses a short-term inflation risk.

Table 9 Policy recommendations for a resilient and sustainable European energy system

Recommendation	Expected Outcome
Accelerate Renewable Energy	Reduced fossil fuel dependence
Reduce Overall Energy Consumption	Lower emissions
Expand Energy Efficiency Programs	Reduced demand
Promote Heat Pumps & Solar	Increased resilience
Develop Mission-Oriented Innovation	Technological advancement
Increase Public Climate Investment	Faster transition
Strengthen Energy Sufficiency Policies	Social equity
Enhance International Technology Sharing	Global climate benefits

Conclusions:

The global geopolitical economy of energy resources is still based on a core-periphery constellation of combined dependencies across major Western economies and semi-peripheral petrostates, with peripheral nations falling behind in the catch-up of opportunities for sustainable and equitable development patterns, as can be seen through the lens of world systems analysis. This framework's central idea is that the industrial core of the global economy uses unequal exchange to obtain an economic surplus from the extractive periphery. The goal of the EU's climate and energy security strategy throughout the previous few decades was to reduce reliance on large proportions of carbon-intensive sources. However, because the decrease in emissions linked to climate change was achieved at the expense of a greater susceptibility to external shocks, the outcome of these measures has been a partial failure. It was recently discovered that the energy strategy needs to be modified with a fundamental reconsideration of objectives and vulnerabilities due to the extreme concentration of natural gas imports from Russia, particularly for the EU's periphery. The three initiatives—substituting renewable energy for fossil fuels, lowering energy consumption, and disseminating social and sustainable technologies around the world—could successfully undermine the idea of uneven and combined development and run opposed to ecologically unequal trading. The EU should stop importing fossil fuels and stop profiting from a specialization in high-tech, high-energy production methods.

This could result in a relative reduction of European dominance in comparison to the periphery and flatten the hierarchy of ecologically unequal exchange within the global system. However, if the EU is prepared to take decisive action to lessen the vulnerabilities of the periphery world, including its closest Eastern partners, by significantly lowering its reliance on fossil fuels, it may simultaneously decide a new age of economic equality and geopolitical stability. Above all, putting into reality the sophisticated policy tools now available in the EU's updated climate and energy strategy, as well as taking the threat of climatic collapse and the principles of climate justice seriously, is a prerequisite for enduring peace and prosperity.

References:

[1] "Is escalation in Ukraine part of the US strategy? - Other News - Voices against the tide." Accessed: Jun. 01, 2026. [Online]. Available: https://www.other-news.info/is-

escalation-in-ukraine-part-of-the-us-strategy/
[2] "Hungary, Slovakia, Czech Republic and Bulgaria still resisting EU ban on Russian oil | Euronews." Accessed: Jun. 01, 2026. [Online]. Available: https://www.euronews.com/my-europe/2022/05/09/hungary-slovakia-czech-republic-and-bulgaria-still-resisting-eu-ban-on-russian-oil
[3] "Europe's push to plug its energy gaps." Accessed: Jun. 01, 2026. [Online]. Available: https://www.ft.com/content/dd4aeffe-d243-49c7-9f4e-152ee54a4f26?syn-25a6b1a6=1
[4] "EU prepares to sell more carbon permits to pay for exit from Russian gas." Accessed: Jun. 01, 2026. [Online]. Available: https://www.ft.com/content/be8d95cc-273a-43b8-b6ab-e9f95685ddc7?syn-25a6b1a6=1
[5] "10 Conflicts to Worry About in 2022: Afghanistan | ACLED." Accessed: Jun. 01, 2026. [Online]. Available: https://acleddata.com/report/10-conflicts-worry-about-2022-afghanistan
[6] G. Arrighi, "The long twentieth century : money, power, and the origins of our times," p. 416, 2010.
[7] "Unequal Exchange - Monthly Review Press." Accessed: Jun. 01, 2026. [Online]. Available: https://monthlyreview.org/9781685901431/
[8] A. Hornborg, "The Unequal Exchange of Time and Space: Toward a Non-Normative Ecological Theory of Exploitation," *J. Ecol. Anthropol.*, vol. 7, no. 1, pp. 4–10, Jan. 2003, doi: 10.5038/2162-4593.7.1.1.
[9] I. Wallerstein, "World-Systems Analysis: An Introduction," 2004, doi: 10.1215/9780822399018.
[10] Rilka Dragneva, Kataryna Wolczuk, "Between Dependence and Integration: Ukraine's Relations With Russia," *Eur. Asia. Stud.*, vol. 68, 2016, [Online]. Available: https://www.tandfonline.com/doi/full/10.1080/09668136.2016.1173200
[11] Jason W. Moore, "Capitalism in the Web of Life Ecology and the Accumulation of Capital," *Verso London*, 2015, [Online]. Available: https://jasonwmoore.com/wp-content/uploads/2017/08/Moore-History-as-if-Nature-Matters-Web-of-Life-introduction-2015.pdf
[12] P. S. Ciccantell, "Ecologically unequal exchange and raw materialism: The material foundations of the capitalist world-economy," *Ecol. Unequal Exch. Environ. Injustice Comp. Hist. Perspect.*, pp. 49–73, Jan. 2018, doi: 10.1007/978-3-319-89740-0_3/SAVE-RESEARCH.
[13] Andrew K. Jorgenson, "Environment, Development, and Ecologically Unequal Exchange," *Sustainability*, vol. 8, no. 3, p. 227, 2016, doi: https://doi.org/10.3390/su8030227.
[14] "Global Ecology and Unequal Exchange: Fetishism in a Zero-Sum World - 1." Accessed: Jun. 01, 2026. [Online]. Available: https://www.routledge.com/Global-Ecology-and-Unequal-Exchange-Fetishism-in-a-Zero-Sum-World/Hornborg/p/book/9780415659284
[15] Paul K Gellert, R. Scott Frey, "Introduction to Ecologically Unequal Exchange in Comparative Perspective," *J. World-Systems Res.*, vol. 23, no. 2, pp. 226–235, 2017, doi: 10.5195/JWSR.2017.733.
[16] Christian Dorninger, Alf Hornborg, "Global patterns of ecologically unequal exchange: Implications for sustainability in the 21st century," *Ecol. Econ.*, vol. 179, p. 106824, 2020, doi: 10.1016/j.ecolecon.2020.106824.
[17] R. Desai, A. Freeman, and B. Kagarlitsky, "The Conflict in Ukraine and Contemporary Imperialism," *Int. Crit. Thought*, vol. 6, no. 4, pp. 489–512, 2016, doi: 10.1080/21598282.2016.1242338.
[18] David Ciplet, J. Timmons Roberts, "Splintering South: Ecologically Unequal Exchange

Theory in a Fragmented Global Climate," *J. World-Systems Res.*, vol. 23, no. 2, pp. 372–398, 2017, doi: 10.5195/JWSR.2017.669.
[19] A. K. Jorgenson, "Unequal ecological exchange and environmental degradation: A theoretical proposition and cross-national study of deforestation, 1990-2000," *Rural Sociol.*, vol. 71, no. 4, pp. 685–712, Dec. 2006, doi: 10.1526/003601106781262016;WGROUP:STRING:PUBLICATION.
[20] Alf Hornborg, Joan Martinez-Alier, "Ecologically unequal exchange and ecological debt," *J. Polit. Ecol.*, vol. 23, no. 1, pp. 328–333, 2016, doi: 10.2458/v23i1.20220.
[21] B. A. Khan and T. Kousar, "An On-Policy Tactile Certificate for Safe Traversability in Confined Environments," *Front. Comput. Spat. Intell.*, vol. 4, no. 2, pp. 115–134, May 2026, Accessed: Oct. 01, 2026. [Online]. Available: https://journal.xdgen.com/index.php/FCSI/article/view/541
[22] T. G. Taylor and J. A. Tainter, "The Nexus of Population, Energy, Innovation, and Complexity," *Am. J. Econ. Sociol.*, vol. 75, no. 4, pp. 1005–1043, Sep. 2016, doi: 10.1111/AJES.12162;JOURNAL:JOURNAL:15367150;WGROUP:STRING:PUBLICATION.
[23] "Gas Trade Flows - Data product - IEA." Accessed: Jun. 01, 2026. [Online]. Available: https://www.iea.org/data-and-statistics/data-product/gas-trade-flows
[24] Artur Meynkhard, "Long-Term Prospects for the Development Energy Complex of Russia," *Int. J. Energy Econ. Policy*, vol. 10, no. 3, pp. 224–232, 2020, doi: 10.32479/ijeep.9064.
[25] "Economic Growth in Modern Russia: Problems and Prospects in the Context of Neo-Industrial Paradigm," *J. Appl. Econ. Sci.*, vol. XI, no. 44, pp. 1115–1119, 2016.
[26] "(PDF) Russia's growth problem." Accessed: Jun. 01, 2026. [Online]. Available: https://www.researchgate.net/publication/330937236_Russia's_growth_problem
[27] L. A. Way and A. Casey, "The structural sources of postcommunist regime trajectories," *Post-Soviet Aff.*, vol. 34, no. 5, pp. 317–332, Sep. 2018, doi: 10.1080/1060586X.2018.1494959.
[28] N. Azeem, R. Naseer, and S. Khan, "Unpacking the Role of Spatial Ability in Solving Mathematical Word Problems: A Network and Correlational Approach," *Front. Comput. Spat. Intell.*, vol. 1, no. 1, pp. 37–46, Aug. 2023, Accessed: Oct. 12, 2026. [Online]. Available: https://journal.xdgen.com/index.php/FCSI/article/view/308
[29] "Key World Energy Statistics 2021," Oct. 2021, doi: 10.1787/22202811.
[30] A. O. Hirschman, "National Power Andthe Structure of Foreign T De," p. 188, 1945, Accessed: Jun. 01, 2026. [Online]. Available: https://books.google.com/books/about/National_Power_and_the_Structure_of_Fore.html?id=BezqxPq50dwC
[31] L. Tichý, "EU-Russia energy relations: A discursive approach," *EU-Russia Energy Relations A Discursive Approach*, pp. 1–218, Jan. 2018, doi: 10.1007/978-3-030-04107-6/SAVE-RESEARCH.
[32] "European Energy Security Strategy – Europex." Accessed: Jun. 01, 2026. [Online]. Available: https://www.europex.org/eulegislation/eu-energy-security-strategy-2/
[33] A. V. Belyi, "New dimensions of energy security of the enlarging eu and their impact on relations with Russia," *Eur. Integr.*, vol. 25, no. 4, pp. 351–369, 2003, doi: 10.1080/0703633032000163193.
[34] Irina Kustova, "EU-Russia Energy Relations, EU Energy Integration, and Energy Security: The State of the Art and a Roadmap for Future Research," *J. Contemp. Eur. Res.*, vol. 1, no. 3, pp. 288–295, 2015, doi: 10.30950/jcer.v11i3.693.
[35] N. Esakova, "European energy security: Analysing the EU-Russia energy security regime in terms of interdependence theory," *Eur. Energy Secur. Anal. EU-Russia Energy*

Secur. Regime Terms Interdepend. Theor, pp. 1–280, Jan. 2012, doi: 10.1007/978-3-531-19201-7/SAVE-RESEARCH.

[36] M. Siddi and M. Siddi, "EU-Russia Energy Relations: From a Liberal to a Realist Paradigm?," *Russ. Polit.*, vol. 2, no. 3, pp. 364–381, Aug. 2017, doi: 10.1163/2451-8921-00203005.

[37] "The Russian-Ukrainian gas crisis of January 2006 - Oxford Institute for Energy Studies." Accessed: Jun. 01, 2026. [Online]. Available: https://www.oxfordenergy.org/publications/the-russian-ukrainian-gas-crisis-of-january-2006/

[38] S. Pirani, J. Stern, and K. Yafimava, "The Russo-Ukrainian gas dispute of January 2009," Feb. 2009, doi: 10.26889/9781901795851.

[39] Fernando deLlano-Paz, Paulino Martínez Fernandez, "Addressing 2030 EU policy framework for energy and climate: Cost, risk and energy security issues," *Energy*, 2016, [Online]. Available: https://ideas.repec.org/a/eee/energy/v115y2016ip2p1347-1360.html

[40] "Energy union - European Commission." Accessed: Jun. 01, 2026. [Online]. Available: https://energy.ec.europa.eu/strategy/energy-union_en

[41] "EUR-Lex - 52019DC0640 - EN - EUR-Lex." Accessed: Jun. 01, 2026. [Online]. Available: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52019DC0640

[42] M. Lenzen, D. Moran, K. Kanemoto, and A. Geschke, "Building Eora: A Global Multi-Region Input-Output Database at High Country and Sector Resolution," *Econ. Syst. Res.*, vol. 25, no. 1, pp. 20–49, Mar. 2013, doi: 10.1080/09535314.2013.769938.

Copyright © by authors and 50Sea. This work is licensed under Creative Commons Attribution 4.0 International License.