AMERICAN UNIVERSITY OF BEIRUT

IMPACT OF GEOPOLITICAL WEAPONIZATION OF ENERGY ON SUSTAINABILITY POLICIES OF SOCIOPOLITICS, ENVIRONMENT, AND ECONOMY

by
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ABSTRACT
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Title: Impact of Geopolitical Weaponization of Energy on Sustainability Policies of Sociopolitics, Environment, and Economy

Energy has long been used as a tool of foreign policy. It has been progressively interlinked with geopolitical relations being shaped by a multitude of factors such as market competition, geopolitical tensions, and regulatory frameworks. With energy diplomacy being increasingly evident in contemporary geopolitical relations as it utilizes energy resources and trade to achieve foreign policy objectives, this thesis tackles the implications that energy weaponization has on sustainability policies. Energy sustainability is one of the three energy policy objectives of any state. This research includes the analysis of the three policy objectives discussed in the 'Impossible Energy Trinity' that presents the tradeoff that states face between energy security, sovereignty, and sustainability.

The included case study showcases the intersectionality of energy weaponization in policy making on economic, societal, and environmental levels and its implications. It is focused on Russia and the events that led to its current politically volatile nature as an energy producing and exporting state. The Russian invasion of Ukraine case is explored from the scope of the energy trinity which includes energy security, energy sovereignty, and energy sustainability in assessment of its current status. Accordingly, the impact of energy weaponization will be detailed though a particular focus on energy sustainability in Russia and the region. In order to assess this impact on energy sustainability, the three pillars of sustainability implicated will be discussed in both qualitative and quantitative methodologies. The subsequent policy differences within each of the three pillars are assessed over the period beginning with the Russian invasion of Ukraine on the 24th of February 2022 until January 2024.

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INTRODUCTION

1.1. Background: Energy Relations Overview

In today's global climate, increasing geopolitical tensions and risks can be considered the peak it has reached since the Cold War. With Russia's invasion of Ukraine listed as one of the greatest risks for the annual year of 2023 in the Eurasia Group list, Maplecroft announced this year's geopolitical risk to be the highest it has been in years. With the current growing global conflicts, this situation is becoming increasingly volatile. The global powers, China and USA, have had a growing rivalry that has led to global economic downturn, which in turn continues to lead to additional conflict between the two powers. Meanwhile, the Russian invasion of Ukraine has expedited the Western countries' retaliatory sanctions and the International Criminal Court charges. This war seems to be ongoing with no foreseeable end as Western nations continue to arm Ukraine and Russia continues to enlist allies such as Belarus in a seemingly proxy war (Gamso, 2023). The new emerging global political landscape is led by China's global economic power and influence over Africa and Asia met with Russia's influence in global energy markets and influence over Eastern Europe and its subsequent aggressions. Even in historically trade-friendly democratic countries in Eastern Europe, rising nationalism has been a recurrent theme. This rising nationalism and democratic backsliding have contributed to the volatility of international conflicts (Gamso, 2023).

As such, energy relations have been at the forefront of these conflicts. Energy has long been used as a tool of foreign policy. It has been progressively interlinked with geopolitical relations being shaped by a multitude of factors such as market competition,

geopolitical tensions, and regulatory frameworks. This is evident in recent EU and Russia relations and US and Europe relations (Boute, 2022). Energy diplomacy has been increasingly evident in contemporary geopolitical relations as it utilizes energy resources and trade to achieve foreign policy objectives (Boute, 2022). Russia has been asserting its influential dominance over neighboring countries by using its energy supplies for political leverage. Russia has used this source of power as an 'energy power' as a means to its ends (Royal, 2019). Russia's leverage stems from its supply of natural gas accounting for nearly 40 % of the European Union's demand in 2021. Moscow maintained this enormous leverage over the EU's energy sector for a substantial period prior to these geopolitical shifts (Prince, 2023). The European countries' dependence on Russian energy gave Russia significant influence over the area's foreign policies (Royal, 2019). Within this interdependence, Ukraine played a crucial transit point for oil and gas. Many European countries, such as those in Eastern Europe, had reached a point of total dependence on Russian gas to meet their energy needs (Boute, 2022). As the world's largest natural gas producer and second largest crude oil producer, global reliance on Russia's fossil fuel exports has led to the dangerous dependence of countries such as Germany and the European Union (Marques, 2023) (Stelzenmüller, 2022). Once the Russian invasion of Ukraine began in February 2022 and continued to drag on, fears have grown that Russian President Putin would use Russia's energy leverage as a political weapon (Stelzenmüller, 2022). Putin has demonstrated this weaponization in the cases of Nord Stream 1 and Nord Stream 2 Gas Pipelines (Stelzenmüller, 2022). The Nord Stream 2 Gas Pipeline was meant to double the amount of gas that Russia can transport directly to Germany in a representation of increased commitment and reliance (FT, 2022). However, retaliatory sanctions imposed by the EU preventing the initiation of the Nord

Stream 2 Pipeline due to the invasion of Ukraine led to a Europewide energy crisis (Reuters, 2022). On the other hand, under the umbrella of different excuses such as required maintenance and decreased supply, Russia cut off gas supply through Nord Stream 1 for a number of months (BBC, 2022). In the face of Russia's increasing power and energy weaponization, a new geopolitical scene became prevalent while Germany and the EU realized the need to decouple themselves from fossil fuel reliance to achieve energy security (Stelzenmüller, 2022). In order to achieve more reliable and sustainable energy sources, the market's priority became cheaper and cleaner energy. If successful, these alternatives will be replacing the fossil fuel giant and global superpower in a long-term trend (Marques, 2023).

1.1.1. Dissecting Impossible Energy Trinity

In a shift from their fossil fuel energy reliance on Russia due to recent geopolitical advancements and retaliations, neighboring states have been transitioning their dependence to more reliable energy sources. The Russia-Ukraine War, the Nord Stream Pipelines sanctions, and Russia's weaponization of energy have reflected the weakened positions of states in three areas: energy security, energy sovereignty, and energy sustainability (Thaler, 2022). Once the political tensions exacerbated since the Russia-Ukraine war began and the consequential retaliatory sanctions, Russia withheld its oil and gas energy source in a stronghold over the region interfering in foreign energy policies, internal energy affairs and societal impacts and consequential sovereignty, and the concern for future availability of energy sources. The substantial influence that Russia's weaponization of energy demonstrated contributes to the understanding of exploring domestic and foreign policy tradeoffs that countries face in transitioning towards alternative energy sources. The energy geography tradeoff between these three pillars

advances the geographical, geopolitical, and geoeconomics perspectives on energy transitions. On this basis, the energy transition creates an 'Impossible Energy Trinity' between the three energy policy objectives of security, sustainability, and sovereignty. States particularly experience this tradeoff when aiming to expand energy sources and electricity production and contribute to cross-border energy systems.

Energy security refers to the "uninterrupted access to sources of energy, diversification of sources and routes of supply, abundant supplies, resilience against external shocks, and energy self-sufficiency," based on availability, accessibility, and affordability (Thaler, 2022). Energy security across borders is achieved through access to flexible balancing power and the economic leveling of energy demand and supply across affected states. Ensuring energy security typically reduces state autonomy in energy policymaking. Ongoing geopolitical tensions are imposing pressure on states to expand into renewables and continue to secure energy supplies through cross-border energy systems as is increasingly tangible within the EU. Energy security has become closely related with energy governance and climate change (Thaler, 2022). With the goal of imposing Russia's status as a world player rather than simply accepting a supplicating role in international negotiations, Putin maintains a primary objective of economic prosperity and international influence through its global energy leverage (Crabtree, 2023). This emphasizes Putin's strategy for energy security and sovereignty. The geopolitical threats that this imposes on the conventional global energy infrastructure motivate states to pursue energy diversification and increase investments in renewable energy sources (Khan, 2023). Along with increasing tensions and cross boundary withholding of energy sources, energy security has reached a critical stage due to global depleting fossil fuel reserves and the enormous impact of the increase in demand for fossil

fuels on the environment. Due to geopolitical conflicts, spiraling energy prices, and climate change, energy policy is of utmost importance in international relations, with energy security being at its core.

Energy sovereignty refers to "the power of a country to control its own government" (Thaler, 2022). Externally, as is relevant to the geopolitical realm of this study, "energy sovereignty comprises protection from supply disruptions by outside actors." (Thaler, 2022). Sovereignty entails the ability to make national energy policy decisions independent from foreign influence and interference. The trade off in energy sovereignty is evident in EU foreign energy governance which highlights structural interdependencies between EU countries and their neighbors and the resulting geopolitical power relations. During the transition to energy sources alternative to Russia, there becomes subsequent pressure on the 'Impossible Energy Trinity.' (Thaler, 2022). Russia's invasion of Ukraine and the weaponization of energy that have triggered the energy crisis have put European unity and values to the test. It has led to major internal energy policy reforms. Further interventions could affect the EU's path towards energy sovereignty with a possible opportunity presenting itself towards EU energy sovereignty and climate change ambitions (Birnbaum, 2023).

Sustainable energy reflects the clean energy systems based on renewable energy sources, which are continually fueled by nature and derive directly from the sun through different means. Sustainable energy markets, also motivate exploiting, competitive advantages, and economies of scale towards more green investments. It particularly focuses on mixed domestic production and energy imports (Thaler, 2022). The sustainability of energy measures the impact of energy weaponization by assessing its consequences on the sociopolitical, economic, and environmental pillars.

Of these three pillars of the energy trinity, states must prioritize two of them, leaving them with three policy choices, including the dirty option which sacrifices energy sustainability, the insecure option which compromises energy security, and the non-autonomous option which relinquishes energy security. Thus, the transition to alternative sources of energy to limit state interdependence, and a decrease in climate change towards possibly more renewable based energy systems involves the impossible energy trinity struggle for many states, in the form of a trade-off between the three pillars of security, sustainability, and sovereignty (Thaler, 2022).

1.1.2. Defining Energy Weaponization

Oil and gas are now intertwined with geopolitical international relations, foreign policy macroeconomic monetary policy, electricity, and national security (Royal, 2019). Russia utilizes its energy sources as a tool for foreign policy and national security leverage. The weaponization of energy affects multiple dimensions of a state, such as its sovereignty. Energy weaponization has become a multi-dimensional resource that reflects broader ties within economic and political systems. Within the increasingly volatile geopolitical tensions, energy is enabled as a geopolitical weapon due to independence of states' energy security, global economics, and states' sovereignty. Energy is a weapon that primarily threatens sovereignty of states, and hence affects other aspects nationally, regionally, and globally (LaBelle, 2023). It also involves using energy as a conflict or coercion tool through energy embargoes or disruptions (Boute, 2022).

Russia has weaponized its natural gas exports in pursuit of its strategic goals in Europe in order to maintain influence and control over key energy markets, economic leverage, as well as geopolitical leverage (FT, 2022). Energy weaponization by Russia has already been utilized in 2009 during a price dispute, which lead to similar shortages

in Europe (FT, 2022). While the term may be often and easily misused, the defined ‘energy weapon’ has been commonly used by Putin in his efforts to subjugate Ukraine and divide Europe (Tsafos, 2022) (Yatsenyuk, 2022). As the country uses energy to reassert its influence as a global power by asserting it as a tool for political pressure, Russia has been defining the means and potential for energy to be used as a weapon (Marques, 2022) (Yatsenyuk, 2022).

1.1.3. Defining Energy Sustainability

The months following the Russian invasion of Ukraine have showcased the initial impact of the weaponization of energy on the energy market and energy sustainability. Putin’s aggression has led to prolonged horrors of the Russian occupation of Ukraine while it gains unprecedented political and economic influence over Europe. However, if Europe and other energy dependent neighboring states maintain a strategy of energy transition towards more self-reliant and independent sources, this energy war’s outcome will set the stage for future European security and prosperity (Yatsenyuk, 2022). Sustainability is a vital part of facing the current and future challenges, among its three pillars. In line with a series of international agreements and goals such as The United Nations Framework Convention on Climate Change and The UN Sustainable Development Goals, the focus becomes the need for sustainability in a ‘development model that can meet the needs of the present without compromising the ability of future generations to meet their own’ (enel, 2023). As such, in order to assess the impact of energy weaponization on the geopolitical sustainability and availability of future energy sources, we need to assess its impact among each of the three pillars of sustainability, sociopolitical, environmental, and economic.

The sociopolitical impact of energy weaponization remains at the forefront of concerns when dealing with its consequences. The impact of energy weaponization is primarily humanitarian and has affected Russia's neighboring states on many social levels such as the threat on food security among many other factors (UN, 2023). While Putin's goals are primarily strategic and geopolitical, the impact of energy weaponization, especially within the cases of the Nord Stream Pipelines, have expanded to environmental impacts. While the initial impact of the pipelines' leaks has created substantial environmental damage, the other end of the spectrum showcases the positive environmental impact of energy sources transitions towards renewables in the aim of limiting energy reliance on Russia (IISS, 2022). The economic pillar is impacted through a partial connection between discussions of geopolitical risks and energy prices that has been established. Although a rise in geopolitical risk has a favorable impact on oil prices, it has been noted that prices do not necessarily decline when geopolitical risk subsides. While shifts in discussions about geopolitical risks cannot fully account for changes in gas prices, it is evident that an increase in gas prices correlates with heightened geopolitical actions (Gursoy, 2021).

CHAPTER 2

RESEARCH QUESTION & METHODOLOGY

2.1. Research Question

With the evolving sources of energy and the ongoing depletion of fossil fuel resources, the relationship between energy, energy weaponization, geopolitical forces, conflict, and state security has been contested. I am interested in studying the intersectionality of the weaponization of energy in the economic, socio-political, and environmental fields, and its subsequent impact on energy sustainability. The weaponization of energy has profound implications on the economic, social, and environmental policy of states, as demonstrated by the ongoing Russia-Ukraine conflict. The use of energy resources as a tool for achieving strategic military and political objectives has been a key element of this conflict, with Russia cutting off gas supplies to Ukraine and using its control over energy resources as a leverage point in negotiations. Such practices have had far-reaching consequences, not only for the energy sector but also for the broader economies, societies, and environments of Russia and its energy dependent neighbouring states. Therefore, the Russia-Ukraine war serves as a compelling case study for understanding the impact of energy weaponization on energy sustainability and the need for strategies to mitigate its negative consequences. As such, I am interested in studying the implications of weaponization of energy on policies that impact the energy sustainability of states. Further, stemming from the 'Impossible Energy Trinity' and consequential state sacrifices, this thesis answers **the question of what the implications of Russian energy weaponization is on the policies of the three pillars of**

sustainability: socio-political, economic, and environmental, within Russia, Ukraine, and the EU.

2.2. Research Methodology

As significant contributors to the past and current dynamic of international affairs, it is essential to study the recent developments of energy producing and exporting states. I adapt a qualitative methodology relying on a discourse analysis of the recent history of energy producing states by relying on relevant treaties and the consequential development of geopolitical relations. An essential aspect of energy and its effect on international security and policy making is studying the history of treaties, the parties involved, and their impact over time. An overview on energy and its weaponization allows for insight into the shift in priorities and interest for states as energy becomes a tool for political means. Additionally, addressing international security allows for an increased focus on the political and social implications of energy conflicts and weaponization on an international level. As such, the case study is included in my research to showcase the intersectionality of energy weaponization in policy making on economic, societal, and environmental levels and its implications. The case study is focused on Russia and the events that led to its current politically volatile nature as an energy producing and exporting state. The Russian invasion of Ukraine case is explored from the scope of the energy trinity which includes energy security, energy sovereignty, and energy sustainability in assessment of its current status. Accordingly, the impact of energy weaponization will be detailed though a particular focus on energy sustainability in Russia and the region. In order to assess this impact on energy sustainability, the three pillars of sustainability implicated will be discussed in both qualitative and quantitative

methodologies. This includes the Russia Ukraine war, the Nord Stream Leaks, and the impacted region of energy suppliers and customers within the region. The global weaponization of energy has become an increasingly utilized tool in geopolitical conflicts with expanding implications. The consequences of Russia's invasion of Ukraine and its implications on energy supplies have revived state anxieties about foreign energy sources and their overreliance on these sources which has led to many years of dangerous dependency. In the new continuously developing geopolitical reality, studying the economic implications of this conflict can comprise the analysis of its impact. The case study begins with an overview of the Russia Ukraine Conflict in 2003 and the annexation of the Crimea in 2014, leading to the Russia Ukraine war in 2022 and the Nord Stream leaks. The case of the Nord Stream pipeline explosions is a case that reflects the intensifying underlying geopolitical conflicts of the region with the collateral damage of nations affected by the lack of energy. The environmental aspect of sustainability is explored through the current short-term impact through already cultivated data along with the long-term expected extrapolated impact.

In order to portray the economic impact of the weaponization of energy within the frame of the Russia Ukraine war case study, I also adapt a quantitative methodology to portray the shift in energy markets in the region. The collection and analysis of numerical data allow different affected and reflective factors to be explored. This includes the drastic industry changes reflected in the change in oil and gas prices in the export levels of different countries. This shows the significant shift that was caused by energy weaponization in the energy market. I also briefly rely on data visualization tools such as graphs and charts to present the findings in a clear and concise manner. A quantitative approach provides a systematic and objective understanding of the economic impact and

the shift in the energy market due to the conflict, which could be useful in informing policy decisions and economic planning.

2.3. Research Limitations

Within the methodology, the research is rooted in the study of different periods in time. This is to study the relevance of energy producing states and the recent history of relevant treaties for these countries. Since the case study has a particular focus on the Russia Ukraine War that began in February 2022 until the present, the accounts can vary between recent events and unclear interpretations of geopolitical moves and motivations. However, due to the possible somewhat subjective nature of some accounts, the sources from which I retrieve this data have led to partially skewed results. In order to refute this impact on the research, I use multiple resources and accordingly compare the relevant information from different accounts. This research is especially conducted to explore energy weaponization on a state level. In order to maintain the research's aim of studying the impact of international energy weaponization and conflict on the three realms of economy, policy and society, and environment, and their influence on policy making, the focus is maintained to a limited scope of the case study of the Russian-Ukrainian case despite the different actors involved and the wide scope of factors.

CHAPTER 3

LITERATURE REVIEW: HISTORY OF RUSSIA-UKRAINE RELATIONS

3.1. Reasoning behind history recount

While turning to recent Russian national and foreign policies that aim at weaponizing energy resources in the country and the consequential impacts on energy sustainability in the region, it is important to understand the origin of current interdependence in the energy sector between Russia and its neighboring states (Siddi, 2020). Each of today's political strategies, decisions, conflicts, and speeches stem from dependencies, energy trade patterns and relations, and a long historical process. From the many historical accounts of Russia and its relationship with neighboring states, particularly Ukraine, it may seem like contesting narratives of empire and colonial rule vs. one of sovereignty and self-determination (Siddi, 2020). The narratives are two that are incompatible, providing a context for the current conflict. The Ukrainian story overlaps with Europe's towards global developments and a future based on autonomy and freedom (Kordan, 2022). While the two contesting narratives intertwine, Russia's trajectory seems to reject the global efforts towards the sovereignty principle. The current Russia - Ukraine war is a culmination of conflicts within the global community. The road to peace for Russia is limited by its historical past and identity, eliminating an opportunity toward peace with its neighbors (Kordan, 2022). The available recounts of historical events shape the historical judgment that leads to contemporary history and to present needs and situations. The narration of the past is inevitably narrativized to suit and legitimize today's events and policies (McMahon, 2023). These insights provide a

premise on which to understand the Russia – Ukraine war along with Putin's reference to history to justify Russia's war against Ukraine. On the other hand, Ukraine's story engages differently with the Russian one, as both engage entirely differently with the global history narrative (Kordan, 2022). Why is history being recounted, who is recounting it, and by whom it is received are all essential elements in understanding how contemporary history came to be. The Russian narrative considers Ukraine to be an essential part of Russia's historical and political identity (Miller, Reiber, Siefert, 2022). In the absence of Ukraine, Russia would need to redefine itself outside the context of an empire, which appears to be a challenging task given its strong ties to an imperial history. On the other hand, Ukraine has intertwined its pursuit of self-determination with calls for support from Europe and the international community to help safeguard its democratic values. Ukraine is engaged in a struggle for its very existence. The separation between Ukraine and Russia is now unmistakable and the conflict has further highlighted this division (Miller, Reiber, Siefert, 2022).

3.2. Reasoning behind case study selection

The Russia - Ukraine war presents an ideal case to present the causal relationship between the weaponization of energy and its impact on energy sustainability while being intertwined with the states' energy security and sovereignty, economy, and environment. This case can reflect the underlying importance for the need for economic and strategic power. Ukraine's energy rich nature provides a threat to Russia as an alternative exporter to the EU. Russia's lack of area control, management of the area's resources, and access has repeatedly proved to be a barrier to its long-term goals and its Eastward geopolitical shift. Moreover, Ukraine's highly productive industries, abundant resources, and sizable

population, ranks it as a substantial energy consumer, comparable to the largest economy in Europe, Germany. Consequently, as Ukraine took steps towards EU and possibly NATO membership, Putin seems to have taken precautionary measures accordingly. The aim was to prevent Ukraine's energy market from slipping out of Russian control, while also ensuring that the European Union did not consider Ukrainian gas, coal, and nuclear energy resources as energy sources alternative to the Russian sources. The possibility of the proposed European Union agreement for Ukraine at the time would have granted Ukraine access to financial resources, new technology for industrial modernization, and assistance with restructuring and technical know-how. This would have empowered Ukraine to independently manage and develop its substantial energy reserves with Western support. Such a scenario would have posed a substantial threat to Russia's economic interests and long-term Eastward strategic objectives. In essence, the underlying premise is that Russian aggression in Ukraine is driven by the need to bridge critical resource gaps, with control over Ukraine seen as a solution to this challenge. The impacts of this aggression have rippled throughout the region over multiple pillars and areas (Johannesson, Clowes, 2020).

3.3. Historical Events

Between the 1960s and the early 1970s, substantial oil and gas exports from the Soviet Union to Europe began. Oil and gas were transported via pipelines that were built (Siddi, 2020). In 1964, the Druzhba oil pipeline became operational and began exporting oil from the Soviet Union to countries of the Council for Mutual Economic Assistance, such as Czechoslovakia, Hungary, Poland, and the German Democratic Republic (Siddi, 2020). Tensions that arose in the region between the Eastern and Western blocs in the late

1960s catapulted economic relations between Western Europe and the Soviet Union in the late 1960s (Siddi, 2020). To further amplify the Soviet Union's position, the Urengoy gas field, the largest in the world, was discovered in 1966, with a deposit of 9.9 trillion cubic meters. Being overly dependent on the Middle East, these reserves became increasingly attractive to Central and Western Europe industry. After extensive negotiations, numerous Western European nations finalized supply deals with Moscow, leading to the construction of a pipeline system designed to transport Siberian natural gas to Western Europe (Siddi, 2020). By 1968, Austria was the first state outside of the Council for Mutual Economic Assistance to receive gas deliveries from the Soviet Union, followed by West Germany, Italy, Finland, and France in the following year (Siddi, 2020). The Middle East became more of a substantial competitor in the industry, with notable economic incentives for the Soviet Union after the 1973 oil crisis (Siddi, 2020). This is due to the oil embargo set by the Organization of Arab Petroleum Exporting Countries on sales to several Western states due to their support of Israel in the Yom Kippur War. In the meantime, additional gas fields were discovered in the Soviet Union, becoming the world's largest gas producer in 1984 (Siddi, 2020). Energy trade between the Soviet Union and Western Europe continued to escalate, challenging the opposition of the Reagan administration in the United States, thereby defying the Cold War's confrontational logic. To secure this expansion of Soviet gas exports to Europe, the Urengoy-Uzhgorod pipeline was essentially commissioned in 1984, overlapping with peaking military tensions between the Eastern and Western blocs. As such, the volumes of Soviet gas exports rose from 29 billion cubic meters (bcm) in 1983 to 60 bcm by 1989 (Siddi, 2020).

The Soviet Union's internal political turmoil was a culmination of a conflict between the old and new political, economic, and social orders that had been underway since Gorbachev had risen to power in 1985 (Bunce, 1991). These events had culminated into a final coup on August 18 of 1991. The failure of the coup marked the end of Soviet communism, although the influence of the Communist Party of the Soviet Union had been waning since the outset of Gorbachev's reform efforts in 1985 (Mueller, 2004). The coup's collapse merely emphasized this decline by revealing the diminished power of the once-dominant Soviet apparatus. The significant economic deterioration of the Soviet Union throughout the 1980s had exacerbated ethnic tensions and encouraged regionalism and nationalism (Buncem 1991). The coup, primarily aimed at quashing attempts to expand Russian control, hastened the disintegration of the Soviet empire. On December 25, 1991, Gorbachev announced his resignation as the President of the Soviet Union. Russia assumed the Soviet Union's permanent seat on the United Nations Security Council, and all former Soviet embassies became Russian embassies. The formal dissolution of the Soviet Union took place on December 31, 1991 (Reuters, 2011).

The 1990s were a decade of Moscow-led energy projects which were initially questioned by the global community, along with Russia's foreign policy (Kemmerzell, Knodt, 2022). Several Western European companies later strengthened their partnership and launched new projects with the Russian state company, Gazprom, throughout the 1990s and 2000s (Kemmerzell, Knodt, 2022). The end of the Cold War became the cornerstone of EU-Russia interdependence as energy trade continued to rapidly expand (Knodt, Kemmerzell, 2022). In 1993, Polish policy makers announced the agreement for the construction of the Yamal-Europe pipeline and long-term gas supplies as "the contract of the century" with Russia (Knodt, Kemmerzell, 2022). It became operational in 1997

and reached its maximum capacity of 33 bcm by 2005, transporting Russian gas to Germany and Poland via Belarus (Knodt, Kemmerzell, 2022). Following the fall of the Soviet Union and the Warsaw Pact, a number of Central European states as well as the Baltic republics joined the European Union and NATO. This scenario weakened Russia's economic and political status. President Vladimir Putin's assumption of power in 2000 was the beginning of an attempt at remediation of the situation with a focus on the consolidation and economic modernization of the country (Siddi, 2020). The focus initially lay on the country's consolidation and economic modernization. Moscow received backing for this initiative due to its nearly exclusive position as the primary provider of natural gas to Western and Central European nations, along with the former Soviet republics. Putin had aimed to establish a Euro-Asian Economic and Political Community as a rival to the European Union (EU). Despite initial setbacks, recent research highlights the increasing significance of Euro-Asian economic connections in Putin's forthcoming geopolitical strategies. This is further confirmed by the 2014 30-year energy agreement between Russia and China (Siddi, 2020). Russian gas was further transported to Turkey across the Black Sea by the Blue Stream pipeline built through a joint venture including Gazprom and the Italian company ENI between 2001 and 2002 (Siddi, 2020).

Political disordance began in Ukraine in 2004 and 2005 in a falsified election of pro-Russian President, W. Yanukovych, and the 'Orange Revolution' in Kiev (Johannesson, Clowes, 2020). In a largely significant move in 2005, Gazprom and its German partners BASF and E.ON initiated the Nord Stream pipeline project, with the potential to transport 55 bcm of gas per year from Russia to Germany across the Baltic Sea (Siddi, 2020). Within the same period, several European companies, such as German,

Italian, and French companies, reliant on Russian gas imports extended their long-term contracts with Gazprom (Yildiz, 2023). The falsified Ukrainian election of 2004-2005 was followed by a Pro-European and Pro-Atlantic course of Ukrainian President, Viktor Yushchenko in 2005-2010 (Johannesson, Clowes, 2020). The beginning of this presidential course marked the beginning of the Russia - Ukraine gas war (Johannesson, Clowes, 2020). Disputes between Russia and Ukraine emerged concerning the price and the transit of gas lead to temporary disruptions in the Russian gas supply to Europe in 2006-2009, with approximately 80% of these exports usually going through Ukraine (Yildiz, 2023). These developments were accompanied with rising geopolitical tensions between Moscow and the West, leading to growing concerns over energy securitization and relevant policy discourses. The energy trade relations of EU and Russia suffered the negative repercussions of the political developments of the second half of the 2000s. In 2008, Russia opposed NATO cooperation with Georgia and Ukraine in a NATO- Russia meeting in Bucharest (Johannesson, Clowes, 2020). This was followed by the Russian-Georgian War which caused Russia's annexation of the Abkhazia and South Ossetia 'republics' and the prevention of Georgia from converging into European structures (Johannesson, Clowes, 2020). Russia's increased assertive foreign policy amidst the Russian-Georgian war and the prospect of NATO enlargement fueled tensions in the region. In 2010, Russia launched an Energy Strategy up to 2030 which it had adhered to (Siddi, 2020).

In 2010, both Ukraine and Russia signed the 'Kharkiv Accords,' providing access until 2042, along with an agreement regarding the Russian Black Sea Fleet's extended stationing in Sevastopol (Miller, Reiber, Siefert, 2022). Beginning 2013, Ukraine was negotiating an association with the EU drastically increasing Russia's precautions and

measures (Johannesson, Clowes, 2020). In retaliation, Russia largely increased customs duties on Ukrainian goods, collapsing the magnitude of Ukrainian exports to Russia (Johannesson, Clowes, 2020). Accordingly, Ukraine swiftly suspends negotiations on its association with the EU (Yildiz, 2023). This resulted with a ripple of protests in Kiev, 'Euromaidan,' of several hundred thousand participants. By 2014, a police force took brutal action against demonstrators in open fire in Kiev, wounding and killing hundreds. With the uproar of turmoil and social instability, President of Ukraine, Victor Yanukovych, escaped to Russia on the 21st of February 2014 (Johannesson, Clowes, 2020). On the 1st of March 2014, Russia invaded Crimea (Johannesson, Clowes, 2020). In the following month, the Republic of Crimea autonomously announced its independence and organized a referendum on the affiliation of the Crimea to Russia (Johannesson, Clowes, 2020). Further, as Russia forces invaded Crimea, war in Donbas began. This was in the aim of gaining territory and weakening the new pro-Western government in Kiev by entering Ukraine through Donbas. This led to an intense clash between Ukrainian and Russian-led forces. The composition of the opposing forces varied between the two states. The Russian-led forces included units from the regular army of the Russian Federation and pro-Russian armed formations of Ukrainian separatists in the Donetsk (DNR) and Luhansk (LNR) Peoples' Republics (Yildiz, 2023). Ukraine authorities launched an 'Antiterrorist Operations' strategy against separatists in Donbass where both Donetsk and Lugansk were self-proclaimed by Pro-Russian separatists (Johannesson, Clowes, 2020).

The strategic importance of Crimea to the Black Sea Fleet has been a historically contested issue. The Black Sea Fleet provides the leeway to protect transport routes to and from Southern Russia, the South Stream, and Blue Line pipelines (Euracoal, 2023).

However, this reasoning is particularly contradicted in the case of the invasion of the Crimea on the 1st of March 2014 where there was no threat to Russia's bases (Euracoal, 2023). From the point of view of the resource dependency theory, the main reason for the Crimea invasion is the discovery of enormous gas fields in the state and in the north-western part of the Black Sea near it. These supplies may particularly render Ukraine independent from Russia and its gas exports, leading to a Russian resource gap in terms of gas markets and foreign currency (Euracoal, 2023). The discovery of the Black Sea gas may additionally directly compete with the Russia gas supply to Romania, Bulgaria, and Hungary, since Ukrainian gas has a particular competitive advantage due to its access to an already complete and established infrastructure of a pipeline network and short transportation distance. The newly discovered energy fields in the Black Sea gave hopes to Ukraine for energy independence which were unfulfilled. In the same move, Russia's annexation of the Crimea ensured securing the market for Russian exports to Ukraine and eliminating a potential competitive threat to Russian gas supplies to Europe from Ukrainian energy fields in the Black Sea. However, this did not halt Ukraine's efforts towards developing other gas reserves and maintaining the strategy of Naftogaz to achieve self-sufficiency in gas, stop gas imports by 2020, and then gradually increase gas exports to the EU in the following years (Euracoal, 2023). Ukraine's strategic importance in the energy realm has been historically significant as it maintains its enormous input since its energy contribution to the former USSR, as it produced 80% of USSR total coal production amounting to 117 million tons in 1940 (Euracoal, 2023). Ukraine has possessed the world's seventh-largest known coal reserves, estimated at approximately 33.9 billion tons. Notably, some of these highly promising coal regions, like the untapped lignite deposits in the Dnipro coal basin, remain untapped. As of early 2015, based on

market prices at the time, the assessed worth of these confirmed coal reserves surpassed a staggering two trillion dollars (Euracoal, 2023).

As signatories to the ‘Kharkiv Accords,’ both states were provided access to the Black Sea Fleet until 2042, falsifying the claim that the Crimea annexation was connected with securing access to Sevastopol for Russia’s Black Sea Fleet (Yildiz, 2023). This occupation, parallel to the Donbas one, simultaneously does not represent two different economic and political objectives of Russia. The crisis of Ukraine in 2014 escalated the tensions into visible confrontation and also had repercussions on the energy trade positions of both the European Union and Russia in a clear presentation of the repercussions of energy weaponization on the region’s economic status. Before the Russia-Ukraine crisis, Ukraine was Russia’s main energy resource importer. Ukraine annually acquired 50 bcm of gas from Russia, which accounted for approximately one-third of Russia's European gas exports, totaling 146 bcm in 2014 (Yildiz, 2023). At a price of $247 per thousand cubic meters (tcm), this represented a substantial market worth $12.3 billion each year. Ukraine's gas procurement from Gazprom significantly exceeded that of Germany, Russia's second-largest customer, which purchased 38.7 bcm in 2014 (Yildiz, 2023). Nevertheless, due to the deep-seated hostility between Russia and Ukraine, Gazprom does not officially acknowledge Ukraine as an international customer. On its website, Gazprom states: "Germany has been, and remains, the largest buyer of Russian natural gas. Its total import volumes in 2014, including resale, came to 38.70 bcm." It's plausible that, in light of the events of 2014, Gazprom considers Ukraine to be part of its domestic market (Yildiz, 2023).

The Russia - Ukraine war of 2014 had an outstanding impact on the region geopolitically and economically (Johannesson, Clowes, 2020). Since the start of the

crisis, Ukraine initiated energy efficiency measures to reduce reliance and imports from Russia to 42 bcm in 2014 (Siddi, 2022). Concurrently, the war escalated during 2014-2017 in bloody conflicts and destruction in Donbas. Ukraine's aim at an energy market shift and Russia's invasion of the energy rich Crimea highlighted the crevices of Russia's resources in its energy markets, energy, and gas transport infrastructure. The region struggled with the consequences of these shifts and conflicts with the EU-Russia relationship oscillating between the ever more elusive quest for a mutually smooth geopolitical balance and increasing conflict. This balance was evidently offset in the Russian invasion of Ukraine in February 2022. This was a turning point for Europe's politics, security, and economy. The escalated crisis in 2014 provoked EU imposed sanctions on Russia, listing energy security high on the priority list of EU policy makers. Energy security in the EU was highly threatened throughout that period as Russian energy supplies covered approximately 40% of the gas, 33% of the crude oil, and 29% of the solid fuels imported by the EU (Siddi, 2022). While the EU-Russia energy trade relationship was mostly composed of oil, gas has been the most politically sensitive commodity due to its more technically difficult transportation and its import requires large and long-term investments into pipelines or liquefied natural gas (LNG) terminals. This is especially since approximately half of the EU's imports of Russian gas were channeled via Ukraine, sincere fear over the EU's energy security and a repeated scenario of the gas shortages that were caused by the Russian-Ukrainian gas transit crisis of January 2009 (Siddi, 2023). This was a particularly strong concern in Eastern European countries, such as Latvia, Bulgaria, and Slovakia that were highly dependent on Russia for gas supplies. In this context, the EU and its member states drafted the 2014 European Energy Security Strategy and the 2015 Energy Union framework. The purpose was to

diversify energy suppliers and strengthen resilience against supply shock-induced crises. Presided by Jean-Claude Juncker, the European commission was appointed for the implementation of the Energy Union. The focus was on increasing energy security and solidarity, creating an integrated EU energy market, improving energy efficiency, decarbonizing the economy, and supporting innovation and competitiveness. To strengthen energy security, the EU envisaged the construction of new pipelines such as the Southern Gas Corridor and the LNG terminals to import non-Russian gas. The EU's framework of approach towards Russia was a cold and wary one. It was issued that the EU will consider reframing the energy relationship with Russia based on a level playing field in terms of market opening, fair competition, environmental protection and safety, for the mutual benefit of both sides" (Siddi, 2021). According to the Russian Energy Strategy, the energy policy goal was to maximize the utilization of national energy resources in order to support economic growth, improve standard of living, and strengthen Russia's position in the global economy, while maintaining the European market as the main destination for Russia's energy exports until 2030. At the time, the strategy also entailed a planned increase of energy exports by 2023 where one quarter of Russian oil exports and one fifth of gas exports were expected to go to East Asia. Evidently, as the Ukraine crisis escalated, Russia's strategy urgently reoriented its exports towards Asia (Siddi, 2020). Gazprom accordingly signed a deal with China in 2014 to export 38 bcm/year of gas over a period of 30 years. While this provides Russia with an apparent safety net of exports, the gas fields and infrastructure used are different from the ones used to export to Europe (Siddi, 2022). Competition between China and Europe remained apparent with the EU remaining as the main importer (Siddi, 2022).

In a measure of protecting the interests of the West, Lithuania opened an LNG terminal in late 2014. While Latvia expanded its storage capacity, Slovakia, Hungary, and Poland built interconnecting pipelines. This was aimed to strengthen the energy security of Eastern state members in a possibility of a reverse of gas from West to East, in the benefit of Ukraine (Siddi, 2020). The implementation of this energy system framework has provided the European Union with partial immunity from the possibility of external supply shocks affecting one or a group of countries. In an agreement towards peace in September 2014, Ukraine and Russia-backed separatists participated in the Minsk I Agreement for a 12-point ceasefire deal whose provisions included prisoner exchanges, deliveries of humanitarian aid, and withdrawal of heavy weapons. This agreement was short-lived as its provisions were violated by both parties (Reuters, 2011).

Over the period of 2014-2019, negotiations took place between Russia, Ukraine, and the EU in the face of a transit crisis comparable to that of 2009. Avoiding this crisis was also possible due to the overlapping motivations of Russia and Ukraine to shelter their lucrative gas trade from the political crisis. The gas trade relations continued and intensified amidst the rising political tensions similar to the Cold War scenario due to the interdependence of the two parties within this energy relationship. As recent developments have shown, the Russian exports of oil and gas to the EU were vital to the Russian state budget due to the difficulty in reorienting these exports towards other markets. This case and these specific pipelines reflect the path of dependency between the two parties and the necessary investment to create new pipelines and alternative markets. In the summer of 2015, the Minsk II Agreement was signed and by February 2015 a 13-point agreement was signed by Representatives of Russia, Ukraine, the Organisation for Security and Cooperation in Europe (OSCE), and the leaders of

separatist-held regions Donetsk and Luhansk (Stulberg, 2015). Despite the Minsk II Agreement and the support of the leaders of France, Germany, Russia, and Ukraine, the military and political steps were unimplemented which is mainly due to Russia's insistence that it is not a party to the conflict and therefore not bound by its terms. The two involved parties' interpretations of the agreement diverged leading to what was named "Minsk Conundrum" (Stulberg, 2015). At this stage, Ukraine's agenda was not limited to a ceasefire; but was rather followed by the ambition of control of the Russia-Ukraine border, elections in the Donbas, and a limited devolution to the separatists. On the other hand, Russia viewed the agreement as an opportunity to oblige Ukraine to grant comprehensive autonomy and central government representation to rebel authorities in Donbas which effectively gives Moscow the power to veto Kiev's foreign policy choices (Reuters, 2011). This would allow for Russia to return the Russia-Ukraine border to Kyiv's control in a way for Moscow to utilize the Minsk II agreement for its central security demand of Ukraine never being allowed to join NATO which was rejected by NATO and Washington. For the previously Soviet state, this deal presented an opportunity to regain control over its border with Russia and momentarily end the threat of another invasion (Stulberg, 2015).

The development of the Nord Stream 2 pipeline took place in 2015 by Russian state company Gazprom and Western European countries in order to connect Russian gas exports to the EU. The motive behind developing this pipeline was due to Gazprom's long-term strategy to diversify its export routes to Europe, together with Turkstream (Siddi, 2020). As relations with Ukraine continued on a turbulent axis, Gazprom's strategy aimed to create a route limiting its exposure to potential transit disruptions as it continued to prioritize and rely on the European market. This strategy aligned with the

Kremlin's goal to diminish Ukraine's political leverage over Russia and EU-Russia energy relations (Siddi, 2020). On the other hand, the Eastern EU members such as Poland and the Baltic States had continued their attempts to shape the EU policy targeting further energy trade with Russia very critically. The political scene governing energy cooperation remained difficult between involved states. Following Lithuania's request in 2012, the European Commission continued with the antitrust investigation against Gazprom in 2015. Its claim was that Gazprom was abusing its East-Central European markets' monopolistic position. In a show of energy weaponization and its leveraging influence over the area, this monopolistic position was accused of assuming antitrust means to achieve Moscow's aims. The EU had made considerable progress in reducing its vulnerability in its energy relationship with Russia without halting it completely (Knodt, Kemmerzell, 2022). Some EU states present examples of very energy dependent countries which have developed alternative routes. The antitrust case was settled between the European Commission and Gazprom led to reduced potential for legal conflict in EU-Russia energy trade relations and allowed for smooth integration of the EU energy market. Different EU member states' stance vary on their standpoint of relations with Russian energy exports and of new structural projects such as the development of the Nord Stream 2 pipeline. East-Central member states strongly opposed these relations and the development of this project while Western member states were keen to continue their relations and even increase their energy imports from Russia. The United States portrayed its stance in this issue by threatening to sanction European companies at the time that were involved in the Nord Stream 2 pipelines development, advocating the present alternative of its own energy sources. Throughout that period, many claims were made by both Moscow and Kiev. Gazprom claimed that it had supplied 0.7 bcm of gas to

Donbas in the first half of 2015 which Kiev has refused to pay for (Knodt, Kemmerzell, 2022). The situation was alleviated by Europe's supply of 6 bcm as well as the use of gas reserves. The Ukrainian government's ability to maintain the operating lighting and heating during the winter seasons is a result of purchases from suppliers in Europe. This status can be disputed since Europe is essentially a net gas importer from Russia. This conflict caused the loss of 65 coal mines in Donbas leading to a reduced coal inventory to only 1.5 million tons equal to only a week's consumption under usual circumstances. Accordingly, Ukraine was pushed to import coal from other countries such as Poland and the United States (Knodt, Kemmerzell, 2022).

In the same period of 2015-2017, the EU gas demand grew considerably by 76 bcm to 548 bcm/year due to several commercial reasons such as the economic recovery of Europe, decreasing gas production in the EU, lower Russia gas prices, and the limited availability of non-Russian energy sources (Knodt, Kemmerzell, 2022). Energy security for Europe particularly became a priority following the annexation of the Crimea and the subsequent war in eastern Ukraine. Maintained political relations with the EU became a competition between Russia and Ukraine with Russia aiming to protect its largest customer while simultaneously denying its resources to other countries and with Ukraine's relentless efforts to become an EU and possibly a NATO member (Umbach, 2014). Russia's exports to Europe over the span of 2016 to 2018 increased accordingly (Siddi, 2018). In the first 9 months of 2017, coal imports nearly doubled with 55.7% of those imports from Russia at a price tag of $1.2 billion (Knodt, Kemmerzell, 2022). The availability of sufficient reserves and secure infrastructure of Gazprom play a significant role in sustaining this increased demand of the EU. Gazprom utilized the Nord Stream and Yamal-Europe pipelines and near full capacity. Russia maintained its implementation

of new infrastructure projects to support its exports to Europe and beyond, despite the volatile political relations and tensions between them. These infrastructural projects included the launch of the Yamal LNG project in December 2017 and the construction of the TurkStream and Nord Stream 2 Pipelines. At the time, Russia's dependence on Ukraine increased 19% by the first 10 months of 2017 to 77.4 bcm which cost Russia $926 million in transit (Knodt, Kemmerzell, 2022). Ukraine exploited this situation by introducing new tariffs on the transport of gas, increasing the cost of transit from Russia to Europe. The predicted earnings for Kiev over the five years following 2019 secured up to $15 billion. According to Gazprom's data, gas exports to Europe and Turkey amounted to approximately 201 bcm in 2018, compared to 192.2 bcm in 2017 and 158.6 bcm in 2015 (Gazprom, 2019). Despite the political crisis and reciprocal sanctions between the EU and Russia, the increase in Russian gas supplies is attributed to commercial and contextual factors rather than political considerations. EU gas demand significantly rose from 2015 to 2017, reaching 548 bcm/year in 2017, a 76 bcm increase from 2014, although still below the peak of 585 bcm in 2010 (Knodt, Kemmerzell, 2022). The factors contributing to this surge include the economic recovery in Europe, declining EU gas production, lower Russian gas prices, and limited availability of non-Russian liquefied natural gas (LNG) in the European market. Additionally, cold winter temperatures and a shift from coal to gas in some European countries, partly driven by the rising carbon price in the EU's Emissions Trading Scheme in 2017–2019, further stimulated gas demand (Knodt, Kemmerzell, 2022). The growing gas demand was met with a decrease in production by the EU that was due to the progressive depletion of North Sea resources and cuts in production in the Netherlands. Thus, European gas demand had been primarily met with Russian gas imports at market-based pricing rather than oil-linked following the

renegotiation of supply contract terms. On the economic scope, the ruble's weakness, which reduces the domestic cost base for Gazprom in US dollar terms, has made Russian gas exports more competitive. As of December 2019, Russia and Ukraine signed a new gas transit agreement for a period of five years. Russian gas was not competed by expected parties such as China due to some delays in LNG projects (Knodt, Kemmerzell, 2022).

On July 22, 2020, a new agreement aimed at bolstering the ceasefire along the frontline in Donbas was reached during the meeting of the Trilateral Contact Group on Ukraine (TCG). The TCG serves as a platform for discussions on resolving the conflict in eastern Ukraine, involving representatives from Ukraine, Russia, and the Organization for Security and Co-operation in Europe (OSCE) (*Polishchuk, Holcomb, 2020)*. The agreement officially came into effect on July 27, 2020, marking the eighth ceasefire arrangement since the start of 2018 and was considered the most impactful yet (*Polishchuk, Holcomb, 2020)*. In the weeks prior to the Russian attack on Ukraine on 24 February 2022, the Kremlin directed its requests for a new European security framework mainly towards the United States, viewing the European Union (EU) as a subordinate ally to Washington. Additionally, it dismissed Ukraine as an unsuccessful political entity lacking a substantial history of statehood, viewing it as a tool wielded by the West in an anti-Russian capacity. However, the most significant outcomes of the conflict revolve around the impact on Ukraine's ties with both Russia and the EU, its position in European politics, and the dynamics between Russia and the EU (Patt, Stefen, 2022).

CHAPTER 4

ANALYSIS: THE ENERGY TRINITY

Energy sustainability is one of the three energy policy objectives of any state. The Impossible Energy Trinity tackled by authors Philipp Thaler and Benjamin Hofmann showcases the tradeoff that states face between energy security, sovereignty, and sustainability (Thaler & Hofmann, 2022). These three present the basic orientation of a country's policy objectives. While subject to competing conceptualizations, the three terms are driven by analytical rather than normative judgements. The geopolitical interdependence of states supports their energy security due to access to flexible balance of power and the experienced levels of energy demand and supply nationally, regionally, and internationally. This interdependence may also promote sustainable energy as larger markets allow for the exploitation of competitive advantages and economies of scale which allow for green investments. Similarly, and crucially, the geopolitical interdependence of states and their energy markets' integration are inherently present with supranational oversight and enforcement mechanisms that may effectively curtail energy sovereignty. As such, due to limited capabilities and dependence on other countries, states experience the 'Impossible Energy Trinity' in which energy security, energy sovereignty, and sustainable energy cannot be experienced simultaneously but rather must prioritize two of these objectives leaving behind three possible policy scenarios of either the dirty option, insecure option, or non-autonomous option.

Within the 'Impossible Energy Trinity,' energy security has become interchangeable with energy governance and climate change in recent discussions. Energy security refers to the uninterrupted access to energy sources, diversification of

sources and routes of supply, resilience against external shocks, and energy self-sufficiency, all of which are particularly tangible in the case of Russia's invasion of Ukraine and the impacted energy supply in the region. Energy security can be assessed on the basis of the three pillars of energy availability, accessibility, and affordability. These three dimensions reflect the core of the IEA's energy security definition: "ensuring the uninterrupted availability of energy sources at an affordable price." (IEA, 2020) Russia's invasion of Ukraine caused a dramatic shift in the energy market and regions around the world which experienced soaring energy prices amid a volatile geopolitical backdrop with energy security at its core (IEA, 2022).

Implicating the energy sources and supply of a state, sovereignty is "the power of a country to control its own government" (Cambridge Dictionary, 2020). This power is contrasted internationally as the ultimate authority within a territory and externally as the recognition of others of this authority. Accordingly, energy sovereignty is internally referred to as allowing communities to decide on their own energy systems contested by the external definition that comprises both protection from supply disruptions by outside actors and regulatory competition for protectionist policies. This thesis will have a particular emphasis on the external dimension and international energy relations. The focus will be on the sustainable policy making derived from geopolitical energy supplies or lack thereof. This stems from the notion of energy sovereignty implying a country's ability to make independent decisions about the structure and sources of its energy supply and consequential energy policy, free from foreign influence and interference.

Sustainability pertains to the pursuit of a harmonious setting in the face of current and future challenges by developing models that can satisfy current demands without endangering the capacity of future generations to meet their own (Enerl Group, 2023).

The concept of sovereignty was first formulated and emphasized at the first United Nations Conference on the Environment in 1972. This concept truly came to life in 1987 in the publication of the so-called Brundtland Report that included the clarified goals of sustainable development. These goals were introduced as the three pillars of social, environmental, and economic sustainability further known as ESG (Environmental, Social, Governance) (Enerl Group, 2023). Accordingly, energy sustainability denotes a policy strategy that maintains social sustainability, environmental sustainability, and economic sustainability. In order to assess sustainable energy policy making, the policies targetting the three fields of sustainability will be addressed.

4.1. Energy Security

The shock that Russia's invasion of Ukraine caused for the global energy market served as a stark reminder of the importance of energy security. Global energy security is exposed to many threats including climate change, minerals and electricity, and the threatening physical resilience of energy infrastructure, among many others (IEA, 2022).

"The International Energy Agency defines energy security as the uninterrupted availability of energy sources at an affordable price" (Government of Ireland, 2022). As such the National Energy Security Framework builds on this and defines energy security as "a condition of assuring long-term energy availability and public access to energy at affordable costs while also paying attention to environmental preservation" (Rizaldi, 2023). The International Energy Agency presents an international forum of 31 countries that was established in 1974 in the wake of the 1973-1974 oil crisis. As its role has expanded over time to include tracking and analyzing global key trends, promoting sound energy policy, and fostering multinational energy technology cooperation, it analyses and

emphasizes the importance of short and long-term security strategies while addressing issues in all key energy sectors. Energy security is related to energy resilience and consists of 4 pillars to be considered in strengthening the energy security scheme which are availability, accessibility, affordability, and acceptability. In addition to the three pillars of security mentioned earlier, as per the National Security Scheme, energy security also relies on the national acceptability of energy. In this case, the four pillars create a strengthened energy security scheme for a sovereign and independent source. As such, ensuring energy security and sovereignty simultaneously forgoes energy sustainability.

Since Russia's invasion of Ukraine in February 2022, the global energy landscape has shifted dramatically. Different markets in the world experienced extreme rise in prices that deeply affected customers, all against a geopolitical backdrop of threatened energy security at its core. Prior to the war, the aim of almost all policy circles was mainly 'energy independence' and 'energy affordability,' superseding the goal of decarbonizing energy systems as it fell out of nations' priority scopes. The priority has now shifted into the ability of states to become 'energy independent' and resilient as they secure sufficient domestic sources of energy as to not rely on imports, irrespective of the degree of carbon intensity of those sources. This automatically has pushed states, especially in an emergency period of war, to initially phase out less clean forms of energy. As long as the war continues and has direct implications on energy security, it was expected that oil prices would not significantly collapse immediately. The focus on energy security on the national level of all states globally reduces the priority of climate change action globally.

Stemming from Russia's weaponization of energy, Russia used Europe's dependence on its fuels as an element of pressure. Globally, and in Ukraine particularly, the war is increasing the vulnerability of states to climate change and the consequential

energy security risks (Chatham House, 2023). The impact of the war is tangible beyond the Ukrainian borders, with particular impacts on food and energy security. As such, global energy politics had resurfaced with the main theme of energy independence for political security as a main concern for policy makers. The concern over energy security has brought the realization that ambitious climate action is necessary. This has geared global energy politics towards short-term decisions that increase the risk of new carbon emissions being locked in for the long term (Chatham House, 2023). This notion was opposed by the significant rise in fossil fuel costs which encouraged the shift to renewable energy sources and towards more secure energy. Energy security has traditionally referred to a secure fossil fuel supply chain. As geopolitical activities transpire, renewables and energy efficiency play a more prominent and important role within this notion of security. A state's energy system that relies on various energy sources exercises many advantages as it becomes more flexible to operate more safely and reliably, moving away from the sole dependence on the increasingly scarce resource of fossil fuels. Russia's initial leveraging of its energy weapon did not serve with the magnitude it had aimed for at first, especially during the winter of 2022-2023. Russia's attacks on Ukraine were detrimental but did not cause its fall. While Europe did not run out of energy partially due to the strategies devised by policymakers to encourage energy efficiency and to find alternative energy suppliers, Ukraine's energy sector suffered from direct substantial losses which amounted to an estimate of at least $10.6 billion of damage of its utilities and heating systems by March 2023. This left Ukrainian households to endure five cumulative weeks without power during the winter of 2022 (Chatham House, 2023). The invasion further triggered a concern over the EU's energy security and its determination to fill energy storage facilities and find alternative energy sources. These

alternative sources are projected to reach double by 2027 in renewable energy capacity. The invasion and concern over energy security emerged as additional motivation to accelerate renewable energy sources. As per the European Commission's REPowerEU plan released in May 2022, the bloc aims to end its reliance on Russian fossil fuels by 2027. This is in the EU's shift of focus from crisis response to a long-term vision of managing its energy security, encompassing its management of the supply of raw materials, renewables manufacturing, increased interconnections, and the future of joint energy purchasing. The EU is far from achieving these ambitious goals as inflation increases and costs of capital rise making it harder for new renewable investments to get off the ground. Diversifying energy sourcing for Ukraine and the region remains the key to energy security.

Russia's weaponization of energy has impacted the region's energy security heavily. In order to alleviate the threats on energy security in the region, measures vary between short and long-term ones. The short-term measures that can be assumed are somehow limited as they relate to oil and gas and thus affect energy prices as pressure remains high. The weaponization of energy and the impact it had on energy supplied in the region required prompt action to avoid any disruption especially during winter which is detrimental to a country's economy and a factor of instability. This action entailed the diversification of oil and gas supplies as the EU had announced a commitment to end its imports of gas from Russia by 2027. Some other short term actionable solutions included the revival of some coal power plants. As the prices of withheld energy sources increase, the will to maintain energy affordability for a population increased the temptation to revive some coal power plants which had been closed based on environmental grounds. This further implicated the net zero ambitions it had, putting them on hold. Short term

decisions also affected the use of nuclear power plants on European territory as the possible life extension was extended in some countries such as Belgium that postponed its deadline by 10 years to exit nuclear power generation by 2025. The net zero ambitions and the decarbonization of energy supplies remained a priority in the medium to longer terms. Three main possible solutions remained including the focus on the necessity to accelerate efforts towards the electrification from renewables, greater focus on energy efficiency, and a focus on the role of nuclear technology which had resurfaced for a couple of months following the ground of the energy price increase.

Energy security has a direct impact on many main pillars of a nation such as a state's military might, economic growth, and the well-being of its citizens and is accordingly considered a crucial consideration for all nations (Willis, 2023). The Russia energy complex is enormously important for international and domestic energy policies (Alekseev, 2019). Russia's energy security is derived from a developed energy infrastructure which includes fuel and energy, nuclear power, large hydropower and renewable energy facilities, and excess of primary energy production over domestic consumption. Combining both centralised and autonomous systems, the power system of Russia is wielded to provide reliable power supply for the country's vast territories (Alekseev, 2019).

Prior to Russia's invasion of Ukraine in 2022, the geopolitical energy scheme was defined by the agreements signed between energy exporting and importing states with the main aim defined as energy security of each of these states. Following the invasion, some agreements were void, some were renewable, and some continued to be implemented. The most important aspect of these agreements were the parties involved and the extent to which each of their energy security was affected. In 2024, a five-year agreement

ensuring the transit of Russian gas through Ukraine signed by Gazprom, Gas Transmission System Operation of Ukraine (GTSOU), and Noftagaz, comes to an end. This agreement came at a critical stage that averted a repetition of the 2009 gas crisis. It came due to the support of political negotiations between Russia, Ukrainian, and European leaders, in the aim of ending years of arbitration between Russian and Ukrainian gas companies. The agreement particularly entailed Gazprom's commitment to pay $2.9 billion to Naftogaz after an arbitration decision, while all other lawsuits were dropped by Naftogaz, in a step towards a seemingly mutually agreed energy secure status (Corbeau, 2023). Despite the ongoing increasing turmoil, the Russian pipeline is still operating and gas continues to flow through Ukraine to main importers such as Austria, Slovakia, Italy, and Hungary. The 2019 agreement included a possibility to prolong the transit agreement with a 10-year extension beyond 2024 which seems improbable with current events (Corbeau, 2023). The agreement's end date arrives with probable nonrenewal which coincides with the expected end of global gas tightness due to the substantial new LNG supplies from Qatar and the United States (Alekseev, 2019). Russia also aligns its energy strategies and policies on the basis of the Energy Strategy of Russia until 2035 which includes an inter-sectoral strategy for a set of industries and areas of state governance in the energy sector. The implementation of this strategy is divided into two stages, the conservative and the optimistic, defining the lower and upper limit of possible changes in the parameters of the fuel and energy balance (Alekseev, 2019). This energy security scare also prompted the EU to implement an agreement in September 2022 that initiated the implementation of revenue constraints on electricity providers profiting from elevated energy costs, gathering financial contributions from fossil fuel providers, and offering direct financial assistance to small and medium-sized businesses

to ease their energy-related expenses. The efforts set towards a more energy secure situation was followed with the EU members' implementation of policies for the coordination of gas purchases, facilitation of gas exchanged across international borders, and the establishment of a common set of rules to regulate energy prices. Concurrently, the United States and the EU established a joint Task Force regarding Energy Security in the aim of ensuring a stable supply of LNG from the United States to Europe which simultaneously supports the shift towards renewable energy. Gazprom served as a nationalized political weapon for Russia in the midst of global powers who aim to preserve energy security as their top priority. Nationalizing and politicizing Gazprom showcased that the Kremlin owned the view that natural resources are the property of the country in which they are found. States that share this stance include the Gulf states, further intertwining these two energy powers.

As Russia aimed to further export fossil fuels and expand its LNG exports, Western nations came together in a unified approach, affecting every sector, to curb this aim. The failure of such an effort would reveal the vulnerable status of the United States, EU, and all G7 countries which they simply cannot afford (Romanko, 2023). To do so, US exports of LNG and crude oil have been crucial for the EU's almost complete transition of weaning itself off Russian energy. From 2021 to 2022, US LNG shipments to European ports more than doubled, accounting for more than half of Europe's LNG imports. The region had consequently dropped its piped gas shipments from Russia by 54%, emerging the US as the world's largest LNG exporter. The US LNG shipment exports to the EU amounted to more than 55 billion cubic meters in 2022 which represents a 150% increase from 2021 based on the Institute for Energy Economics and Financial Analysis (Forbes, 2023). Crude oil exports also increase around 70% from the previous

year amounting to 1.75 million barrels daily. Europe's energy security was more ensured as, with the support of the US, it managed to reduce its dependence on Russian oil from the outstanding 2.3 million barrels of exports a day to a relative trickle today. This has obviously affected Russia in more ways than one with less clients importing its oil source coercing it into shipping its oil to China and India at a 40% discount instead of the previous simple route of piping directly into European homes (Forbes, 2023). The US's efforts over the past 15 years of building itself into the energy powerhouse it is today was a key factor in motivating the dramatic rewiring of the global oil and gas markets. The US allowed the EU an exit from the situation of otherwise being at the complete mercy of the OPEC cartel, which still considers Russia as a key member (Forbes, 2023).

4.2. Energy Sovereignty

Energy weaponization leads to direct impact on a state's sovereignty. In the discussion of the geopolitical weaponization of energy within the realm of international affairs, one of its main pillars, sovereignty, becomes an area of focus and contestation (Van der Horst, 2023). International affairs are largely set in place through norms that encompass state sovereignty and territorial integrity. Large-scale wars have become a rare consequence of energy weaponization since the Second Cold War due to the significance of state sovereignty in the international system (Van der Horst, 2023). Over the years, and with multiplied aggressions, Russia has severely violated Ukraine's sovereignty by invading and incorporating parts of it (Van der Horst, 2023). State sovereignty has accordingly become a weakened norm. The Russian invasion of Ukraine in a case of energy weaponization has lowered the threshold for future infringements of territorial integrity and state sovereignty (Van der Horst, 2023). Putin attempts to justify his long

history of energy weaponization and sovereignty breaches by claiming that historical errors and illegitimate governments that have justified large-scale violations should be rectified by the forceful redrawing of borders in light of the right of self-determination. Putin's words were especially manifested in February 2022 in the Russo-Ukrainian war which has the potential to fundamentally change the significance and meaning of the state sovereignty norm in international affairs.

In the midst of the upheaval following the Russian invasion of Crimea in 2015, Putin stated his view on sovereignty and stressed the notion that while states should enjoy the freedom of choosing for themselves, they should also follow shared rules and principles (Pitkanen, 2020):

> "What is the meaning of state sovereignty, the term which has been mentioned by our colleagues here? It basically means freedom, every person and every state being free to choose their future. By the way, this brings us to the issue of the so-called legitimacy of state authorities. You shouldn't play with words and manipulate them. In international law, international affairs, every term has to be clearly defined, transparent and interpreted the same way by one and all. We are all different, and we should respect that. Nations shouldn't be forced to all conform to the same development model that somebody has declared the only appropriate one (Putin, 2015).''

In 2021, Russia's pressure on other states' sovereignty became evident in its weaponization of energy in a strategy of restricting gas flows to Europe. While Europe later reduced Russia's market access later, these developments showcase the long term political and economic negative impact of energy weaponization in the geopolitical landscape. In a consistent effort from Putin since the Second World War, energy has been a weapon that threatens state sovereignty. States at the receiving end of energy weaponization aggressions have implemented policies and infrastructure designed to mitigate effects on governments.

In order to study the impact energy weaponization has on the energy sovereignty of states, the boundaries of energy sovereignty need to be clearly stated. Energy sovereignty refers to the entitlement of aware individuals, communities, and societies to independently determine their approaches to energy production, distribution, and utilisation, taking into consideration their ecological, social, economic, and cultural contexts, while ensuring that such actions do not adversely impact others (Cotarelo et al., 2014). Similarly, stemming from state sovereignty, energy independence and security refer to the use of an undetermined quantity of resources that is deemed necessary to keep domestic economies running at full power (Cotarelo et al., 2014). Further, energy sovereignty refers to a state's internal empowerment of communities regarding their energy systems' decisions (Thaler & Hofmann, 2022). On an external level, which will be further developed within this chapter, energy sovereignty entails internal protection against supply disruptions caused by external actors and also the protectionist policies against regulatory competition (Thaler & Hofmann, 2022). Referring to the impossible energy trinity dissected by Philipp Thaler and Benjamin Hofmann that was discussed earlier, at its core, energy sovereignty, much like state sovereignty, refers to a country's ability to decide independently about the structure and sources of its energy supply including its energy governance hardware, energy policy, and energy market and system operation rules; consequently, denoting the ability of decision making about energy free from foreign influence and interference rather than the self-sufficiency of energy supply (Thaler & Hofmann, 2022). A state's energy sovereignty is very fragile and easily reduced since all countries' energy policies set are influenced by other states (Thaler & Hofmann, 2022).

As mentioned previously, a state’s energy sovereignty stems from its whole sovereignty and territorial integrity. Over the years, Russia’s foreign policy could be considered unclear to a certain extent in terms of sovereignty. Deyermond (2016) suggests that Russian contemporary foreign policy employs a dual perspective on state sovereignty. This entails the application of the traditional 'Westphalian' concept beyond the post-Soviet sphere, while adopting what Deyermond terms a 'post-Soviet' approach within it (Pitkanen, 2020). The post-Soviet concept of sovereignty presents a resemblance to the Soviet model and is evident in Russia's interference in neighbouring regions. Through a Russian officials' statements analysis, Deyermond argues that this dual perspective approach underscores Russia's pragmatic view of sovereignty. It allows Russia to assert influence at the regional level while pursuing goals at a global level (Pitkanen, 2020). According to Grigas (2016), Russia's expansionist tendencies and control over territories in the post-Soviet region are closely tied to its policies and narratives regarding compatriots. A significant finding of the research is that particularly since the 2000s, Russian foreign policies have sought to reassert imperial influence over the post-Soviet space, specifically in regions with noticeable compatriot populations. The idea of the Russian World creates a sense of kinship both within and outside Russian borders, forming various groups of inclusion and exclusion (Pitkanen, 2020).

Much like many instances in Russian history as mentioned in earlier chapters, energy was brought back as a weapon of war in 2022 (LaBelle, 2023). Russia’s most recent military violation of Ukrainian sovereignty is marked on the 4th of February 2022 (LaBelle, 2023). An early form of energy weaponization was a challenge imposed on Western sovereignty and political authority after the 1970s crisis after WWII. During the Cold War, OPEC members employed the tactic known as the 'oil weapon,' which posed

a threat to the economic prosperity and the increasing wealth of citizens in liberal democracies. The oil embargo underscored the constraints of 'interdependence sovereignty' and the vulnerability of Western nations when facing pressure from OPEC nations. This situation tested the 'domestic sovereignty' of liberal democracies during the postwar economic expansion of the 1950s and 1960s, which relied heavily on cheap oil (LaBelle, 2023). Henceforth, Russia has presented itself as an international norm-enforcer which includes its efforts to emphasize the importance of abiding by international law, the multipolar world, and the United Nations (Van der Horst, 2023). Prior to Russia's invasion of Ukraine in 2022, Putin offered his take on the definition of state sovereignty in his essay 'On the Historical Unity of Russians and Ukrainians'. By arguing that the current Ukrainian state is a result of reckless decisions taken throughout the Soviet era, Putin concludes that Ukraine can be truly sovereign only in partnership with Russia (van der Horst, 2o23). Russia claims historical assertions and the principle of self-determination to justify significant breaches of Ukraine's sovereignty. By conditioning sovereignty on specific factors, Russia aims to diminish the universality and importance of the norm of state sovereignty. While the United Nations is founded on the principle of equal sovereignty among states, Putin argues that this equality only applies under certain conditions. The forcible annexation of Ukrainian territories could diminish the significance of the norm of state sovereignty. If these violations are tolerated by the international community, challenging state sovereignty and annexing territories may become more acceptable normalizing historical and self-determination claims which csn emerge worldwide. Initially, acceptance of Russian territorial claims might offer short-term stability to the international system. However, yielding to Russian demands is likely to destabilize the entire international system in the long term (van der Horst, 2023).

Russia's approach showcases that its understanding of energy security is intertwined with the country's sovereignty and access to resources in strategic competition (Ferris, 2023). Maintaining an ensured demand security and access to resources is part of Russia's national security framework and, more prevalently, part of its national identity (Ferris, 2023). The networks of the bilateral dependence of trade built as a consequence of the interdependence of the two states provide opportunities for states to exert leverage over other states (LaBelle, 2023). Accordingly, from a realist perspective, state sovereignty is inherently given up to independence because of both states' dependence. Energy interdependence emerges as central in the discussion of state sovereignty (LaBelle, 2023). Energy security is a significant concern for the majority of states, as many governments exert control over their respective energy sectors, which are often characterized by large-scale projects and a limited number of controlling companies. Russia's approach towards energy security is particularly unique since where its sovereignty and energy are both intertwined with strategic competition over resources with other countries (Ferris, 2023). An essential pillar of maintaining Russian sovereignty is its perception of itself as a great power which is largely based on its military might, its nuclear capabilities, and particularly due to its maintained ability to produce and export significant volumes of natural resources. This stance reinforces Russia's view of its prominence as an international actor and power and its significant impact on foreign affairs due to its natural resource reserves (Ferris, 2023).

Russia's annexation of Crimea in 2014 presented another example of a violation of a whole range of the fundamental principles of international law and treaties in a breach in Ukraine's territorial integrity and security leading to a serious crisis of contemporary international law and of the world security system (Merezhko, 2015). This annexation is

a clear violation of a whole range of norms and principles of international law including the UN Charter and the bilateral international treaties between Russia and Ukraine (Merezhko, 2015). From a qualitative analysis perspective, Russia's approach proved to be towards a strengthened rule over the Crimea through different human rights and sovereignty claims. Russia did so by applying a constructivist approach implying that sovereignty is a socially constructed norm and is subject to debates based on morality (Pikanen, 2020). Russia seemed to legitimize its power and strengthen its position over the Crimea by utilizing such claims that may appear to be in conformity with prevailing international notions. This violation by Russia and framework of exceptionalisation on the Crimea created a consequent narrow civic space and violation of human rights, implicating the question of the de facto rule (Ptkanen, 2020).

Ukraine had played two major roles in the EU's natural gas market. These roles are divided into the traditional one of the transit routes for the gas flow from east to the west and the planned role as a natural gas provider for the future of Europe (Keypour & Hendla, 2019). In this case, the balance of power theory is particularly applicable. States become cautious of each other as the increased power of one state occurs at the expense of others while shifting the balance of power in their own favor (Mearsheimer, 2001). The triangular context of Russia, Ukraine, and the West's relations is in line with Kenneth Waltz's notion that states tend to preserve the current balance of power and only take action when the balance is disturbed (Waltz, 1979). It is clear that the alignment of Ukraine and the West was and continues to be perceived as a clear and direct threat to the former regional balance in which Ukraine was considered within Russia's influence (Keypour, 2019). Ultimately, this shift in regional balance may suggest that Russia denying Ukraine of its Crimean resources was not due to the need for these energy sources

but rather as part of its annexation of Crimea (Keypour, 2019). Russia's main argument to justify its annexation accordingly was for the protection of the rights of ethnic Russians in Crimea (Pitkanen, 2020). This justification which was declared with the "referendum," can be simply challenged with the concept of the realist balance of power (Keypour & Hendla, 2019). Ironically, in this act of energy weaponization, the energy component was not the main incentive for Russia's capture of Black Sea resources. However, these reserves were recognized as part of the main Ukrainian economic empowerment plan, specifically on the EU's energy market. In Russia's attempt to maintain the prior balance of power, Russia aimed to block Ukraine's access to them utilizing this wedge strategy. In one part, Russia's annexation of the Crimea could be considered Russia's energy policy towards the EU which entailed an infringement of energy sovereignty through a means of energy weaponization to an end of maintained balance of power. In another part, the annexation was built on Russia's goal to emasculate Ukraine's natural gas transit role by the construction of the Nord Stream and Turkish Stream Pipelines (Keypour & Hendla, 2019). These two outcomes of the annexation showcase that while Ukraine is often addressed as an energy transit state, it is overlooked as a significant producer and contributor to the European energy market demand. Nevertheless, Ukraine was one of the three largest unconventional gas resource owners in Europe and has held a promising position of future energy supply to the continent (Keypour & Hendla, 2019). By violating its energy and territorial sovereignty in 2014, Russia has since been exercising de facto control over Crimea since the annexation despite the opposing position of the international community (Pitkanen, 2020). The annexation was very much driven by the undermining of Ukraine's energy and gas diversification strategy. Weaponizing Crimean energy and breaching the sovereignty of the Crimea was essential for Putin's strategy to

work. The Crimea's vast offshore oil and gas resources in the Black Sea, estimated between 4-13 trillion cm of natural gas, was entrusted by its new government to Gazprom (Umbach, 2014). Following the annexation, Russia paid the economic price and continued to expand its geopolitical interests (Umbach, 2014).

As is evident, energy is a weapon that directly threatens state sovereignty (Gros & Shamsfakhr, 2022). Similarly, Russia's frequent gas supplies interruption in 2021 constantly situated Ukraine's statehood in jeopardy. The frequent interruptions of gas supplies in 2021 were coordinated events in order to increase price pressure by utilising the EU market design to cause significant economic damage. The breach of energy sovereignty of Ukraine also impacted the EU as the increasing energy prices and inflation since 2021 are mostly attributed to supply constraints from the positions of both markets and the direct consequences of these supply restrictions (Gros & Shamfakhr, 2022). Given this context, Russia's approach has been towards a trade and foreign policy strategic and practical reorientation, especially following its invasion of Ukraine in 2022 (Ferris, 2023). Regardless of Russia's ability to implement its goals, its perception showcases its intention to restructure the globe on its own terms with Moscow as the center for global decision-making. Russia's perception is important since it clearly specifies what and which states Russia views as a threat to its sovereignty. Ultimately, international attempts to warn against the dangers of climate change and fossil fuel reliance are viewed as a further threat to Russia's territorial and energy sovereignty. Russia links the international community's narrative towards environmental threats closely to a threat towards its hydrocarbon industry, energy sovereignty, and international policies, all of which are linked to Russia's sovereignty (Ferris, 2023). Russia's actions have been aimed at neutralizing Ukrainian plans for energy independence and becoming

an exporter (Keypour & Hendla, 2019). Further, Russia has removed Kyiv from Gazprom's relations with Europe in the geopolitical interest of Russia and maintained weaponized energy dependence of Europe (Keypour & Hendla, 2019). As reported by the Russian News Agency, the Russian Foreign Minister Serget Lavrov states that Russia has managed to adapt and expand its energy exports' geography in 2023 by implementing reforms to strengthen its energy sovereignty (Russian News Agency, 2023). Lavrov also explained Russia's awareness of the leverage it holds in weaponized energy since its supplies allow other states to restrain the rise in prices for energy raw materials and consequently more economic stability (Russian News Agency, 2023). The evident bilateral energy interdependence has provided Russia with the opportunity to exert leverage over other states (LaBelle, 2023).

Russia's invasion of Ukraine in 2022 also served as a stark reminder of the energy dependence that the EU had on Russia for fossil gas imports. The hold that Russia had on the EU's energy sovereignty was blatantly evident, presenting a historical turning point for European energy and security policy (Buck et al., 2022). One of the primary strategic foreign policy goals of the EU, its member states, and many other countries, since the beginning of the war, has been the strengthening of energy sovereignty (Kardaś, 2024). Ukraine's vast gas resources and infrastructure and its potential for significant development in the field of renewable energy, present opportunities for cooperation with the EU, which can support in ensuring energy security and decarbonization efforts, which cumulatively lead to more sustainable energy sovereignty (Kardaś, 2024). In a decision aiming to alleviate Russian leverage on energy sovereignty, EU heads of state agreed to phase out EU dependency on Russian fossil fuel imports shortly following the invasion, on the 11th of March 2022 (Buck et al., 2022). Despite the EU's efforts to decouple from

Russian oil, the international energy market's structure naturally implies that Russia's behaviour as a superpower can still impact the EU's energy security and sovereignty (Ferris, 2023). Russia also views external attempts to cap oil prices, through international pragmatic and economic decisions, as a direct attack on Russia's energy and territorial sovereignty (Ferris, 2023).

For Russia, Ukraine, and the EU, the weaponization of energy impacted each of their energy sovereignty. In all three states, the domestic sovereignty was evidently breached due to the resulting energy crises (Graf, 2014). Energy weaponization caused a direct impact on the economic activities of the states including household budgets. These activities took place in addition to forced unforeseen and unconventional restrictions on energy use. The technical competency and political legitimacy of states were compromised due to externally created crises affecting state institutions and politicians (LaBelle, 2023). The energy sovereignty of these three states, through different means, was violated in order to inflict economic and political gain (LaBelle, 2023).

4.3. Energy Sustainability

The impact energy weaponization has on the energy market and energy sustainability was evident in the first months following the Russian invasion of Ukraine in February 2022. The historic attacks of Russia over Ukraine have motivated its unprecedented political and economic influence over Europe. As discussed earlier, the approach of Europe and other energy dependent neighboring states has been towards a more independent structure of energy (Yatsenyuk, 2022). The current and future energy challenges faced by these states need to be tackled with a sustainable approach taking into consideration its three pillars. This is in accordance with international agendas mentioned in multiple international agreements aimed to maintain a development model

that can both meet present needs while ensuring the possibility of maintaining future ones (Enel, 2023). Accordingly, the assessment of the impact of energy weaponization on state energy sustainability lies in the assessment of the impact it has on the three pillars of sustainability which include the sociopolitical, environmental, and economic pillars (Rosen, 2009). This transition occurs based on a series of international goals and agreements that are applied at individual states level and their involved communities (Enel Group, 2023). The most notable of these include The United Nations Framework Convention on Climate Change and its entailed protocols on the commitments to greenhouse gas emission reduction, The Convention on Biological Diversity (CBD) and its promotion of the conservation of biodiversity, and the best know UN Sustainable Development Goals (SDGs) and its coverage of a wide range of sustainability issues (Enel Group, 2023).

Across the world, sustainability is becoming a goal to which countries aim. The three pillars usually pull policies in different directions rather than towards the goal of sustainability as some may be achieved at the expense of others. Energy sustainability denotes more than just energy sources as it also includes a more comprehensive take that involves the sustainable use of energy in the overall energy system (Rosen, 2009). This includes the processes and technologies for the utilization of energy sources, transferring them into useful forms of energy. As these pillars may take place at the expense of each other, the balancing of trade-offs between equally important goals within these three categories for all states happens despite the variance in their purpose (Purvis et al., 2018).

Much like energy security and energy sovereignty, energy sustainability may simply be defined as the application of the definition of sustainability to energy at a more complex and involved level. Within this framework, energy sustainability entails energy

provision in a sustainable manner that ensures the provision of energy services to all people, in the present and in the future, sufficiently for the provision of basic necessities that are affordable, do not impact the environment negatively, and are accepted socially (Rosen, 2009).

The first impact that will be assessed in this chapter is the sociopolitical one which lies at the top of the list of concerns when dealing with the consequences of the weaponization of energy. The sociopolitical pillar will tackle the social and geopolitical consequences of the invasion which showcase the primarily humanitarian impact of energy weaponization on many social levels such as the food security threat (UN, 2023). While Putin's strategy of energy weaponization had the primary goal of influence and reinforcing its position as a global power, the impact expanded to environmental lengths as is the case with the Nord Stream Pipeline leaks. Energy weaponization has caused a two-fold impact through the environmental lens. The pipelines' leaks created significant environmental damage. On the other end, states have been shifting to more sustainable sources of renewable energy to alleviate leverage that Russia has over them and to end their external dependence accordingly (IISS, 2022). The third pillar impacted is the economic one, through a connection that has been established between geopolitical risks and energy prices. A rise in geopolitical risk has had a magnifying impact on oil prices, despite that a decrease in geopolitical risk does not necessarily proportionally also decrease prices. While there may not be a clear direct correlation between an increase in geopolitical risks and a simultaneous one on gas prices, there has been a repetitive trend of increased prices with heightened geopolitical actions (Gursoy, 2021).

As these three pillars are under the same umbrella of sustainability, they are closely interconnected, with each having a spillover effect on the others. Interconnection

lies between the environmental and economic realms, where positive environmental strategies and policies contribute to a more stable economy. Similarly, the sociopolitical dimension of sustainability is connected to both the economic and environmental ones, since it is in a cohesive and equitable sociopolitical structure where a basis for energy sustainability is created (Enel Group, 2023). The assessment of the impact that energy weaponization has had on these three pillars showcases the overall impact on energy sustainability. Accordingly, this chapter will be covering each of these three pillars within the scope of the Russia-Ukraine case study and the subsequent energy weaponization impact on socio political outcomes within the resulting geopolitical scheme, the global concern on environment, and the importance of energy in economic development (Rosen, 2009). The subsequent policy differences within each of these fields that will be assessed will be over the period beginning with the Russian invasion of Ukraine on the 24th of February 2022 until January 2024.

4.3.1. Sociopolitical Impact

As one of the three pillars comprising sustainability, the sociopolitical factor is one that was highly impacted by the geopolitical weaponization of energy in the Russia Ukraine war. This section will be discussing the political changes that were evident in Russia, Ukraine, and the EU since the beginning of the war in February 2022 including socio-politics and geopolitics. Therefore, this section will be discussing the consequential changes in the policy making approach within these affected fields in each of these countries.

Russia has particularly taken on the approach of strategic and practical reorientation for most of its policies including its trade and foreign policy alliances since

its full-scale invasion in Ukraine since 2022 (Ferris, 2023). The reorientation in policies showcases Russia's ambition of a reimagined globe and where it positions Moscow within it. This is evident in the first major policy document released since the beginning of the war in which Russia's plan is detailed in a world where Russia and its allies, China and India, are united for a grand Greater Eurasian Partnership, in the face of hegemonic West (Ferris, 2023). The presented framework situates Moscow as a key factor at the heart of decision-making, with newly developing relationships with middle powers such as Iran creating a reliant and important economic basis for the alliance. While there remains a visible gap in Russia's willingness to execute said goals, this perception clearly shows where Russia's strategic planning is directed towards in the aim of restructuring the globe on its own terms. This also shows what and who Russia views as a threat to its sovereignty. Accordingly, Russia's foreign policy document selectively stresses on the sovereignty of states by announcing its respect for the sovereignty of powers such as India and China, while showcasing an element of distrust and distance from the UK and other European states. With more impact on the geopolitical front, Russia also has witnessed a noticeable shift in the view of the Northern Sea Route (NSR). It has gone from being viewed as a potential international route capable of linking Europe and Asia to alternatively being viewed as a route that is useful for Russia companies specifically in order to deliver energy resources to their own global markets. Russia's attempts at positioning itself as a global power to ensure Russia's dominance over sea routes is an alarming step towards other nations as a precursor to exert further control over the maritime domain, with further projection of Russian sovereignty over international waters such as the NSR (Ferris, 2023).

It is imperative that we assess the socio-political front resulting from Russia's invasion of Ukraine. On the sociopolitical front, Russia's actions have created a high level of instability and political tensions. These tensions have had unique effects on the health and socio-political life of civilians in Ukraine and the region as a whole. The direct and the indirect effects of the war have caused states to reassess each of their socio-political status and the changes needed to be implemented as they continue to impact their societal infrastructure. These occurrences are particularly threatening since it is a region of histories of forced occupation and decades of threats resulting from World War II and its aftermath (Khorram-Manesh et al., 2023). Serving as a reminder of the Cold War, this conflict is a significant experience for the EU with a remarkable intrusion into its democracy, sovereignty, and freedom. The sociopolitical implications extend to extensive consequences in the short and long term for people's lives and rights including impacts on healthcare, food, security, and other aspects of public utilities and health. The short term social implications included war traumatic injuries taking place on the battlefield affecting Ukraine and its neighbouring countries into which they are being transferred to. On the other hand, the long term social implications of the conflict include an increased burden on the health system as a whole on the emergency health care level and the public healthcare systems being overwhelmed with patients with chronic diseases and cancer finding difficulty in accessing the necessary care and medication. This war, classified as hybrid warfare, has been specifically aiming to paralyze Ukraine through its critical societal infrastructure, targeting civilians, food security, transportation network, legal system, health care system, and economy. This is particularly to cause distrust between the public and political institutions due to political chaos, riots, demonstrations, and other

issues. Affecting innocent lives globally, this war has resulted in mass migration, food scarcity, threats of nuclear war, and sanctions, since the end of February 2022.

The sociopolitical changes witnessed within Russia crippled the central Russia government and created opportunities for opposing states to promote their own political agendas and strategies, deviating from the Russian one. The objective of Russia's strategy comes in response to the EU's sanctions and support of Ukraine with weapons in addition to Finland's and Sweden's approaches to NATO membership. Within Russia, some changes were seen as a result of the war and the reaction of other states to it. The country has witnessed a massive migration of young Russians and brain drain. This took place due to the sanctions put in place by the EU and US forcing foreign companies to leave the country and taking its promising employees too. Much to Russia's surprise, Ukraine's resistance was not expected. As such, Russia was not ready to be home to injuries and deaths among inexperienced soldiers. Further, social concerns arose within the state as silent protests in Russia broke out within citizens with the potential to grow into more hostile ones if the conflict continues. A main factor worth considering in the analysis of Russia's political situation is the media. The media reports are more frequent and available than ever before and unprecedented in any previous wars. The presentation of news, wars, destruction, and mass migration of refugees, independent from official government news outlets, greatly influenced internal and external opinions and affected other states' foreign policies towards Russia. Another essential element of discussion in the scope of Russian society is the church. Despite the support that Putin enjoys from the Patriarch of the Orthodox Church, some parts of the church have been vocal about their diverging opinion regarding the war in a signed open letter condemning it despite the risk of prosecution. Further, states that have showcased support for Russia have faced

backlash within their own societies making it difficult to maintain and enforce their own dictatorship on their citizens. Putin's interventions ranging from Georgia, Ukraine, and to Syria, have a clear territorial and geopolitical nature within the region, attempting to impose direct or indirect power over these territories.

The link between energy and politics was brought into focus particularly when Russia exploited the already heightened oil and gas prices since the Covid-19 pandemic in 2021. Russia exploited these prices in Europe by driving up prices before the invasion of Ukraine. This has specifically emphasized the link between energy and geopolitics and that they are two issues that cannot be separated. There becomes a need to determine the role of fossil fuel producers especially in an international scope. Russia's invasion of Ukraine created a fracture in the relationship between Russia and the West. This has made it difficult for Russia, as a major hydrocarbon producer, to discuss export dealings in regional and international forums and has made it particularly difficult to engage with. Accordingly, in its newer foreign policy, Russia's search for new export destinations was intensified. This would entail Russia linking its oil and gas reserves with maritime and rail infrastructure through new terminals along the Northern Sea Route that can process liquified natural gas, coal, and oil with updated port infrastructure. Further, as part of its developed foreign policy, Russia began investments in the North-South corridor via Iran since the war began. This would support the export of oil and put the practical elements of Russia's foreign policy into effect by creating closer economic ties with Iran and India. In further development of its foreign policy, Russia has also identified hydrocarbon rich zones in the Arctic that have access to the sea. Unlike Europe, in which Gazprom held an unchallenged monopoly in the market prior to the war, Asia provides its rival, Novatek, which may impact Russia's plans to expand into the energy market in China. The contract

of The Power of Siberia 2 pipeline with China would give Gazprom a clear role in Asia. Russia's engagement with other states has been of a completely new dynamic since the beginning of the war with international platforms like the UN restricting its ability to interact with states, especially Western ones. Russia has lost this as a forceful tool as it usually used it to further its own interests and to ensure it has a stake in the conversation on an international scale and is heard as a global power. However, Russia has increased coordination with states like Saudi Arabia through OPEC. Saudi Arabia has maintained its neutrality without aligning with the western stance by Ukraine, nor has it imposed sanctions on Russia. While the EU's attempts continue to alleviate Russia's leverage by decoupling from Russian oil, the complexity of the international energy market still imposes the effects of Russia's behaviour as a hydrocarbon superpower on the EU and its energy security.

The war that began on February 24, 2022 was unlike all previous ones as Russia did not publicly declare war as has occurred historically to notify the end of political discourse and beginning of warfare. The invasion was a clear invasion of the Hague Convention of 1907 which requires a warning before warfare officially begins which caused a vast lack of preparedness in the Ukrainian crisis response system to the hybrid war that took place. Some analysts have repeatedly emphasized that the escalation was due to further external pressure which was influencing decision making which plunged the region into a situation of further instability and unpredictability (Khorram-Manesh et al., 2023). Ukraine's foreign policy has drastically shifted since the beginning of the war. Its foreign policies shifted from the mechanisms and instruments it has previously used to promote its old political agenda. Shifting from its bipolar era in a post-bipolar world order, the invasion in 2022 was the end of Ukraine's post-Soviet foreign policy (Kusa,

2023). The war largely impacted Ukraine's international political agenda and its self-identification on the world stage. As a result of its previous short-sighted foreign policy, Ukraine found itself in a situation of no robust security partnerships and no relevant risk management infrastructure as a contingency. Ukraine's position in the international landscape has been reduced to a survival one against its brutal enemy; serving as a reminder that its foreign policy should not be confined to a few countries within a specific strategy.

Ukraine's future foreign policy has been focused on two main objectives which include deterring Russia and the regional balancing of power. Russia's threat is one that will be persistent in the long term. The deterrence of Russia will require a strategic plan since the liberation of all occupied territories would not end the feud; neither will the feud end with Putin's exit from the Kremlin. This will require close cooperation with both Western and non-Western partners which are both vital to ensure the ultimate goal of security as efficiently as possible (Kusa, 2023). The conflict has uncovered the strategies of the region showcasing the political agendas of the United States, China, and the EU. The weakness that was showcased in the US-Ukranian partnership during the resurgence of the Taliban gave Putin the green light to invade. Putin was proved right as Washington broadcasted the invasion rather than deter it. The US was becoming more unreliable to Ukraine as time passed with Biden's wavering support shifting from endorsing the war effort "whatever it takes," to "as long as we can," to emphasising "war fatigue." While Ukraine has been receiving enough financial means to remain undefeated, but not enough to win the war with US support dwindling (Trillo-Figueroa, 2024). Ukraine is required to further its outreach to other states in a pluralistic perspective to make the deterrence on Russia a realistic goal (Kusa, 2023). It remains existential for Ukraine to address the

human tragedy that has occurred on its land. However, without the support of either the US or China, Ukraine remains in the face of Russia solely. Further, with the ongoing downfall of Ukraine, exhausting its resources, feeding its corruption and governance issues, increasing its economic inconsistencies and territorial disputes, the barriers of integration in the EU remain as high as could possibly be (Trillo-Figueroa, 2024). With the focus on the newly forming regional balance of power, Ukraine's foreign policy is being shaped in the expectation of being a key country in stabilising the regional status after the war (Kusa, 2023).

The EU's role within the region is a formidable one; however, its reliance on Russia for energy resources can be viewed as a major vulnerability which can be leveraged. The EU was subject to many risks such as political instability, price volatility, and supply disruptions due to the impact of energy security and diverging geopolitical interests. The challenges that the EU faces throughout this war are significant since it requires these energy sources for its industries and infrastructure since Russia is its primary key resource for natural gas. The energy crisis resulting from the war over the past two years is a clear example of the leverage that Russia still holds over the EU.

As the war began, the EU began internal legislative proposals in regards to REPowerEU (Vecchio, 2024). REPowerEU was launched in May 2022 and came in response to the global energy market disruption caused by the Russian invasion of Ukraine (European Commission, 2022). The legislation addresses internal gas demand along with the broader global energy market. Policy and legislative shifts within the EU began taking shape. Regulations came into effect starting June 2022 which mandated member states to fill their underground gas storage by at least 80 percent by November 2022, and 90 percent in subsequent years until 2025. This comes as a first policy directive

for the EU in the aim of saving gas. Second, legislation was put into place to slowly steer the market to enhance its coordination and transparency of the EU's natural gas market with lowered prices. This involves transparency for Liquified Natural Gas (LNG) markets to publish daily prices and benchmarks requiring market participants to provide detailed transaction information to the EU Agency for Cooperation of Energy Regulators (ACER). The goal is to combat the influence of hub-indexed pricing and potential external manipulations, specifically by Russia, to maintain stable and predictable pricing for LNG imports. Also, steering markets are implemented for the private market to reflect the creation of the new EU Energy Purchase Platform for the common purchase of gas, LNG, and hydrogen from external suppliers in coordination with them. Member states are mandatorily required to ensure the undertaking of respective natural gas. Most importantly, regulation was introduced to enforce a default solidarity mechanism to cover the potential crisis of supply in any member state. In any situation in which a member state may face a gas crisis, it is legible to formally request help, specifying required details such as needed gas volumes, delivery timeframe, and interconnection points to other Member States, the European Commission, and crisis managers, who ensure a coordinated response within three days (Vecchio, 2024).

The current EU laws and regulations have shifted to represent the current geopolitical reality. An interesting evolution that is evident is that Russian providers are now excluded in a strategic step towards legal actions along with the "nationality based" sanctions in response to the invasion.

It is becoming more evident that geopolitical interests overshadow diplomatic peace efforts. With the US steps aside, China avoiding assuming a similar role, the EU's current limitations, and multilateral associations such as the UN, G7, and G20 proving

effective in addressing these geopolitical strategies, the global order requires global powers to assume their rightful roles and responsibilities accordingly within this new order. On the other hand, other emerging powers and developing countries such as ASEAN, Middle East, and India, may view Ukraine's situation indifferently as they deal with their own historical issues. Further, other issues globally take precedent to this conflict. Therefore, Putin remains the only beneficiary from this war as he slowly achieves his goals. Putin has squashed future Ukrainian leadership through expansionist ambitions to defeat domestic political challenges. Russia's capabilities such as its nuclear resources and vast territory allows Putin to aim to integrate Ukrainian land into the post-Soviet sphere (Trillo-Figueroa, 2024). The new regional scene will spark competition among traditional foreign powers including the US, the UK, Germany, Russia, China along with the current emerging global players within the region and otherwise such as Japan, South Korea, Saudi Arabia, the UAE, Turkey, and Poland (Kusa, 2023).

4.3.2. Environmental Impact

In addition to the sociopolitical implications and the consequences that energy weaponization has had on people's lives and rights that were discussed in the previous section, the Russia-Ukraine war has caused far reaching global environmental repercussions (Khorram-Manesh et al., 2023). The war has highlighted the political, environmental, and security imperatives for Ukraine and other states in the region to shift from fossil fuels (Brown et al., 2023). Worldwide, this war is increasing climate change vulnerability, implicating long term risks, delaying decarbonization efforts, and hindering climate action (Brown et al., 2023). The impacts of any war are usually tackled under the scopes of human, economic, and social costs, the environment is often the silent victim of any war (Hryhorczuk et al., 2024). The environmental damage resulting from a war

may be intentionally weaponized as part of a military strategy or unintentionally collateral damage of military activity through shelling leading to wildfires, ‘scorched earth’ tactics such as destruction of dams, or conducting these activities in environmentally sensitive areas like nature reserves. Agents of civil society organizations, governmental organizations, and international agencies have all collected unprecedented volumes of data about the damage that both the Russian offensive and Ukrainian defensive military tactics have caused (Hryhorczuk et al., 2024). Throughout this period and the consequent rise in fossil fuel prices, the importance of a fast transition to clean and renewable energy was emphasized in the aim of improved energy security while partially maintaining the climate agenda (Adhityo Rizaldi et al., 2023).

Since February 2022, with every month that passes, the environmental impact of the Russia-Ukraine war has been growing rapidly (European Parliament, 2023). While climate change continues to be viewed as one of the primary challenges worldwide, it is often dragged into the geopolitical nature of the war of a standoff between Russia and the West (Brown et al., 2023). There are two perspectives in which pulling climate change into political tensions could be viewed through. On one hand, the global shift towards renewable energy could be accelerated since it motivates energy security and thus political security. This war has showcased to the world why it is necessary to decrease reliance on fossil fuels from limited and politically volatile partners. An example of such was seen in Poland in February 2022 following the war where people were installing solar panels and heat pumps to alleviate their reliance on energy supplied from Russia (Brown et al., 2023). On the other hand, some actions taking place in order to alleviate this reliance have taken shape in the dirty system option of national power stations which are ensuring higher emissions in the long run (Brown et al., 2023). Prior to the conflict,

"energy security" and "energy affordability" were more important policy objectives than the decarbonization of energy systems. The goal of "energy independence," which has gained precedent recently, is to secure enough local energy sources regardless of how carbon-intensive they may be in order for a country like the US to not depend on imports. This has led to a halt in the phase-out of less environmentally friendly energy sources. Indeed, the COP27 accord was altered at the last minute to exclude any reference to phase-out fossil fuels (Brown et al., 2023). Countries all across the world are investing in the development of coal, oil, and gas abroad while simultaneously constructing or rebuilding dirty power plants at home, forgoing the element of sustainability. Olaf Scholz, the chancellor of Germany, declared that his country would deploy nuclear energy among other power sources to guarantee its energy security within five days after the invasion. In the wake of the 2011 Fukushima nuclear plant meltdown in Japan, the government had pledged to close all of Germany's nuclear reactors, making this declaration all the more remarkable (Brown et al., 2023). In addition, the war has accelerated the search for new strategic allies, particularly in Africa and the Middle East, to take the place of Russian energy. This is creating new fossil fuel energy supply chains all over the world at a time when governments need to be prohibiting new fossil fuel ventures and gradually closing down already established ones in order to meet the globally agreed-upon target of no more than 1.5°C of warming (Brown et al., 2023). Just prior to the COP27 UN climate summit in November 2022, a new study revealed that, should all of the newly announced gas projects to address the supply shortage come to life, there would be an approximately 500 megatonne worldwide LNG surplus by the end of the decade. This amount is equivalent to double Russia's entire gas exports that year and five times the quantity of gas that the EU had imported in 2021 from Russia. Therefore, even if political figures constantly

focus on the need to lessen reliance on the imports of fossil fuel, their actual actions may have the opposite impact (Brown et al., 2023).

Ukraine was already having trouble adjusting to the impacts of climate change and reducing its effects. The invasion has detrimentally destroyed infrastructure, harmed the environment, and caused significant poverty and displacement, making the nation even more vulnerable. As publicized by Ukraine's government, the state has suffered over $51 billion in environmental damage since the war started in the period from February 24, 2022 to February 20, 2023 (Guillot et al., 2023).

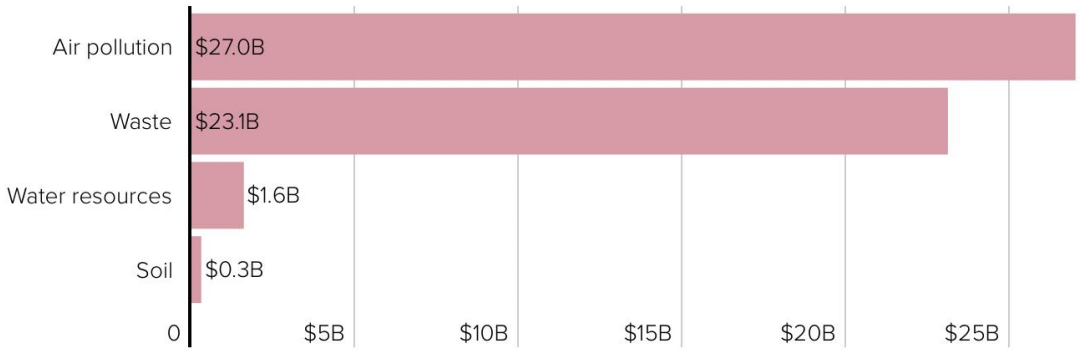

Figure 1: Estimated financial damage to Ukraine's environment from February 24, 2022 to February 20, 2023.

Prior to the conflict, Ukraine, the fifth-most energy-intensive nation in the world, was making progress towards increased energy efficiency and decarbonisation. With the release of its nationally determined contribution (NDC) strategy in 2016, Ukraine pledged to reduce its greenhouse gas emissions by 40% below 1990 levels by 2030. The government then raised this aim to 65% by 2021. A few months prior to the invasion, Ukraine declared that coal-fired power generation would cease by 2035 during the COP26 climate summit in November 2021. Additionally, the government set an ambitious target of utilising renewable energy sources to satisfy 25% of Ukraine's energy

needs by 2035. A significant investment is required for the motivation of solar and wind technology advancement. The catastrophic human and environmental costs of the war in Ukraine provoke the global fear of a nuclear war. The increase in geopolitical tensions in the region makes it increasingly difficult for states to collectively implement strategies to eliminate greenhouse gas emissions. Particularly, the war has heavily impacted Ukraine's natural resources making it increasingly difficult for the nation to combat the consequences of climate change.

Russia has destroyed essential elements that may have supported Ukraine's mission to combat climate change such as its energy infrastructures, levelled entire cities, and damaged water infrastructure with its missiles, drones, and artillery shells. One of the country's main environmental aspects, its agricultural land, has been destroyed by unexploded bombs, landmines, and shelling, along with its forests and greenbelts. Also, large-scale wildfire risk increases due to the war destruction during a period of increased frequency and intensity of droughts. This was evident in 2022 with almost 25 times more wildfires than in 2021. Up to the point of the invasion, Ukraine was already combating the effects of the 2014 conflict's environmental and economic destruction. Climate change projections view a rise in Ukraine's Black Sea coast, changing precipitation patterns, increased frequency of floods, altered seasonal onsets, and rising temperatures. The war has already seriously hampered Ukraine's capacity to reduce and adapt to climate change, even if it ended tomorrow. Ukraine has little opportunity to focus on anything beyond surviving day to day (Brown et al., 2023). The winter of 2022 saw an average Ukrainian family go without power for five weeks in a row. However, the conflict has severely harmed Ukraine's infrastructure for renewable energy and jeopardised upcoming investments in the field. The Ukrainian government claims that the conflict has destroyed

over 500 water infrastructure facilities, including hydroelectric dams, and that over 90% of wind and 50% of solar energy capacity have been rendered inoperable.

Large tracts of land downstream were submerged in water after the Nova Khakhovka dam near Kherson collapsed in June 2023. This caused questions to be raised about the cooling system of the Zaporizhzhia nuclear power station and its sustainability. Ukrainian President Volodymyr elensky labelled the event as “environmental bomb of mass destruction, “along with an accusation that Russia has repeatedly committed ecocide (Brown et al., 2023). While the war continues with increased hostilities, it is impossible for Ukraine to replace its renewable energy’s destroyed infrastructure. Despite the state’s ongoing chaos, its degree of climate ambition continued within Ukrainian policy circles. New laws were passed in June 2023 to promote investment in clean energy sources and the renovation of the nation's energy infrastructure. In July 2023, the government further reiterated its intention to phase out state-owned coal power facilities by 2035 (Brown et al., 2023).

This conflict has made Ukraine more susceptible to the effects of climate change and has made efforts to cut greenhouse gas emissions more difficult. An estimated 21.9 million tons of carbon dioxide equivalents were released during the first 12 months of the war as a result of war-related operations, and an additional 17.7 million tCO2e were released as a result of war-related fires. Prior to the conflict, Ukraine aimed to cut its energy use by two thirds. At that time, installed renewable energy in Ukraine accounted for roughly 10 gigawatts, or more than 13% of all installed electricity (Hryhorczuk et al., 2024). This goal has become considerably more challenging to attain due to Russia's weaponization of energy supplies, devastation of Ukraine's infrastructure for power generation and heating, extensive deforestation, and harm to Ukraine's renewable energy

systems. In the territories impacted by the war, several factors led to the halt in the development of renewable energy such as damage to substations and networks, shelling, equipment theft by occupiers, and restricted access to power plants. Mainly in the southern regions of Ukraine, nearly 50% of solar and around 75% of wind power plants were shut down by the end of October 2022. Money that was going to be used to combat climate change has been diverted to deal with the aftermath of the conflict. Consequently, the war will negatively impact several nations' net-zero pledges, which would probably exacerbate the climate issue and postpone the world's shift to renewable energy (Hryhorczuk et al., 2024).

In a direct act of war impacting the country's environment in the first 13 months of the conflict, 36 fuel storage facilities were destroyed, including 17 oil depots (Hryhorczuk et al., 2024). This resulted in the burning of 108,000 tonnes of gasoline, oil products, and other fuel, which produced pollution (Hryhorczuk et al., 2024). Even as the conflict rages, Ukraine and its foreign allies are organizing the nation's reconstruction. In order to assist with reconstruction efforts, Ukraine formed the National Council for the Recovery from the War, an advisory body to the President, which was tasked with creating the Post-War Recovery and Development Plan and a new State Agency for Reconstruction and Infrastructure Development. The plan's main objectives were to achieve energy independence, create renewable energy, improve logistical and transportation capabilities, and rebuild and modernise housing and infrastructure (Hryhorczuk et al., 2024).

One of Russia's many geopolitical challenges is that, although being severely impacted by climate change, it relies on its standing as a commodity producer to maintain its standing in the world market. Putin has never been particularly concerned about

environmental security, and many of the consequential policies have been reactive rather than preventive when environmental disasters occur on Russian territory. Putin, in the meantime, has mocked Europe's green energy strategy, arguing that their investment in wind farms, which is insufficient to offset a decrease in fossil fuel consumption, is the real cause of the energy crisis in Europe. Russia frequently objects to proposals in international forums aimed at enhancing environmental security worldwide (Ferris, 2023). Although this may come out as self-interested, it is also partially the result of disparate perspectives on security where Russia's long-standing definition of environmental security incorporates a collective historical belief that the natural environment has no intrinsic value in and of itself, placing the security of the country above any potential security implications. Although it has been proven that climate change has an impact on Russia's national security, strategic documents portray the issue as a threat to the country's economic growth and advocate for real solutions rather than changes to the extractive sectors (Ferris, 2023).

Russia has attempted to divide the problem of environmental security into two main areas: first, the economic harm that climate change is causing to the nation, which Russia is working to mitigate, primarily through improved investment or technological interventions; and second, what Russia believes to be a Western-led scheme to weaken Russian institutions by using the pretext of environmental activism. Russia has presented this as a danger to its interests in the extractive industries and has stated in the UN Security Council that environmental security issues are a pretext for external military actions in nations wealthy in natural resources; perhaps referring to the African continent. Russia views all foreign efforts as a tool used to alert people of the risks related with fossil fuel dependence and climate change as a threat to Russia sovereignty (Ferris, 2023).

Due to this stance and Moscow's environmental securitization, it is evident that Putin rarely cooperates on climate change concerns that are led on an international level in terms of foreign policy. In the UN Security Council, Russia verbally supports climate action but promotes the status quo. Rather than using the platform to protect the environment, Russia typically uses it to ensure that it has a seat at the table and to further its economic interests, meaning fossil fuel extraction. Despite being a signatory on UN-led initiatives that aim to decrease greenhouse gas emissions, Russia's compliance with these initiatives cannot be assessed since the Kremlin does not release data about its rates of oil and gas production and only publicises general statements about production cuts (Ferris, 2023). Additionally, it has come under fire globally for sabotaging environmental regulations that would have otherwise reduced greenhouse gas emissions by declining to impose greenhouse gas emitters with quotas or fines. Ideas of Russian sovereignty are closely linked to Russia's perception of environmental threats, its perception of threats to its hydrocarbons industry, the personal interests of the ruling elites, including Putin, and the pivotal role that energy resources play in Russia's foreign policy. Moscow will retaliate violently against any attempts by the international community to advance an agenda that limits Russia's ability to extract hydrocarbons, export them to both new and existing markets, and build the necessary onshore and offshore infrastructure (Ferris, 2023). Russia imposes its stance on the environment on international forums influencing relevant policymaking.

Despite being highly affected by climate change, Russia relies on its role as commodity producer in order to maintain its international standing. These are determining factors in its strategic policymaking in international forums concerning climate change. The consistent international attempts to combat climate change are

strongly opposed by Russia since more emphasis is put on Russia's national security rather than the potential security ramifications resulting from climate change, which can be viewed as an infringement on its sovereignty. Although climate change has the potential to impact Russia's national security, it is viewed as a challenge to Russia's economic growth that calls for technological or practical answers rather than changes to the extractive sectors. Additionally, Russia sees the warming Arctic waters as more of a chance to improve access to shipping lanes rather than a crisis (Ferris, 2023). As one of their initial responses to the invasion several European nations diverted their imports away from Russian gas and oil, in an attempt to put financial pressure on Russia. Because of the coordinated efforts of policymakers to identify alternative suppliers and promote energy-efficient measures, neither Europe nor its neighbouring regions experienced an energy shortage. However, a milder winter, active demand-reduction and energy-efficiency campaigns, and supply diversification especially through the LNG imports combined with increased availability of gas in the spring of 2023, led to increased confidence for sometimes lower gas and electricity prices in Europe.

The UK government revealed intentions to approve hundreds of new oil and gas licenses in the North Sea at the end of July 2023. This comes to show the decline in the country's once-firmly held climate promises in a trade off towards "energy independence." In mid-2022, as Russian gas supplies were diminishing, Europe resorted to importing LNG to replenish its gas storage facilities ahead of winter. Since LNG is processed, transported, and cooled, it has a significantly larger carbon footprint than piped natural gas under normal conditions. The carbon footprint of all gas supplies in Europe, including piped gas and LNG, will therefore increase with increased reliance on LNG. As of September 2022, total carbon emissions from gas had increased from slightly over

30 kg of carbon dioxide (CO2) per barrel of oil equivalent (boe) to nearly 40 kg of CO2 per boe.

Additionally, the EU hoped that Ukraine would establish itself as a significant exporter of the "green" hydrogen that the Green New Deal calls for to be the backbone of Europe's integrated power system by 2030. A growing number of leaders are recognising that energy security is a prerequisite for political security and that aggressive climate action is required to ensure energy security. Many nations have seen firsthand why they need to lessen their reliance on fossil resources from untrustworthy partners as a result of Russia's invasion of Ukraine. It's almost patriotic to invest in energy efficiency and renewable energy. People in Poland were reportedly building heat pumps and solar panels after the invasion in February 2022 to reduce their reliance on electricity supplied by Russia. The EU intends to raise the percentage of renewable energy in its supply to 42.5 - 45% of the total by 2030 under its REPowerEU plan, up from the 40% objective decided at the end of 2021. Germany increased its aim for renewable energy by 5% to 8% of the power mix by 2030. Meanwhile, the US government's Inflation Reduction Act (IRA) allocates up to $400 billion in funding for renewable energy through a combination of subsidies, tax breaks, and loan guarantees (Brown et al., 2023). The US faced a threat from this crisis because of its strong ties to its European allies, in addition to its impact on Europe's energy security. To completely decouple from Russian energy supply and cut greenhouse gas emissions, both Europe and the US are growing their renewable energy sources. But as they produce more renewable energy, they run the risk of relying more and more on Chinese supply chains for materials and equipment used in renewable energy production (M. Willis et al., 2023). The United States also outlawed the import of any coal, LNG, or oil from Russia in March 2022, just after the invasion. In order to cut

greenhouse gas emissions and break their reliance on Russian energy, Europe and the US are simultaneously expanding their capacity for producing renewable energy. But as China dominates the majority of the world's supply chains for renewable energy equipment and materials, the switch to renewable energy has brought about a new kind of energy reliance (M. Willis et al., 2023).

The war is not only producing humanitarian suffering and geopolitical upheavals, but it is also making Ukraine and the rest of the globe more vulnerable to climate change and impeding multilateral climate action. The conflict highlights the necessity for Ukraine and other nations to transition away from fossil fuels on a political, economic, environmental, and security level. This can be done through encouraging energy efficiency, making it possible for renewable energy sources to be produced and stored, lowering the amount of fossil fuels used in the energy and agriculture sectors, and moving away from authoritarian nations when sourcing (Brown et al., 2023).

Although Russia is heavily impacted by climate change, it also depends on its role as a producer of commodities to maintain its standing internationally. Its strategic policymaking on the environment and its conduct in international forums concerning climate change are informed by this inconsistency. Moscow frequently opposes international attempts to combat climate change because it places more importance on maintaining Russia's national security than the potential security ramifications of climate change (Brown et al., 2023). Although climate change has the potential to impact Russia's national security, it is viewed as a challenge to Russia's economic growth that calls for technological or practical answers rather than changes to the extractive sectors. Additionally, rather than seeing the warming Arctic waters as a disaster, Russia sees them as a chance to enhance access to maritime lanes. Russia views the climate change

movement, driven by the West, as a plot to undermine the country and its extractive industries. The Kremlin's convergence of environmental and national security concerns is demonstrated by the appointment of former intelligence officials to positions related to environmental security. Many environmental connections between Russia and the West have been broken since the war. Furthermore, laws limiting ecological activity have been strengthened, and there is little international control of Russia's large drilling projects or their environmental effects. The majority of environmental NGOs headed by Westerners have closed (Brown et al., 2023).

4.3.3. Economic Impact

The third component of sustainability is the economic one. The impact of energy weaponization showcases the role that energy plays in economic development. With one of the main aspects of the Russia-Ukraine war being the weaponization of energy, this war has caused detrimental impacts on the region’s economy. States have assumed new national and foreign policies since the beginning of the war to mitigate the challenges that the war has introduced (Adhityo Rizaldi et al., 2023).

The Russian invasion of Ukraine is one that has affected global peace with an extreme compounding effect on a number of preexisting adverse economic trends such as rising inflation, extreme poverty, increasing food security, and deglobalisation. The peace dividend had previously supported high social expenditures. This has come to an end as it has been evident that rebalancing fiscal priorities has proven to be challenging. Within the global context, a war mostly targeting fuel and food shortages exacerbated the post-pandemic inflation that had already reached multi-decade highs in most countries. Inflation was also affected by the major supply chain disruptions that the war has caused, in addition to the strain that the sudden surge of demand has on supply. Russia and

Ukraine had together accounted for a quarter of global wheat exports. Disruption to the supplies of these commodities drives prices up. The increase in energy prices caused by the war has had a significant impact on all sectors of the economy (Zhang et al., 2024).

Russia's invasion of Ukraine was met with a series of unprecedented sanctions on Russia and military support for Ukraine. The economy was impacted as many firms took their following steps after a combination of corporate pronouncements, public opinion, and trade restrictions took place and forced them to reconsider their supply chain linkages with Russia. Economic vulnerability had been used throughout the war by weaponizing the weak links in supply chains (Andreas Glunz, 2022). Further, military action has been focused on causing the destruction of physical capital, leaving Ukraine in a state of severe economic distress. According to the World Bank, the region has witnessed an extreme increase in poverty rates from roughly 100 million to around 700 million (Zhang et al., 2024).

Russia has faced sanctions which aimed at weakening Russia's ability to finance the war and to target the political, military, and economic elite that have motivated the invasion. The sanctions only target these areas as all other areas such as food, agriculture, and health are excluded from restrictive measures. Since the war began, consequent sanctions took effect, and global partnerships fell apart, Russia's coordination with Saudi Arabia through OPEC+ has been more pressing. While attempting to maintain its neutral position, Russia has refused to publish its oil export figures in the midst of the war caused decline in global energy prices (Adhityo Rizaldi et al., 2023). It is suspected that Russia continues to export significant volumes of oil despite its nondisclosure and Saudi Arabia has continued to invest in Russian companies like Gazprom (Brown et al., 2023).

Despite the UK’s decoupling from Russian oil, the structure of the international energy market imposes Russia’s influence on UK’s energy security, nonetheless. Russia continues to refuse disclosure of volumes since it views this as a breach of its sovereignty and security. Russia views external efforts to cap oil prices as a dangerous precedent that could be extended to other areas of the Russian economy and Russian values. This is a further confirmation that Moscow views international economic and pragmatic decisions as a direct attack on Russian sovereignty (Andreas Glunz, 2022).

The weaponization of energy, exemplified by Russia's invasion of Ukraine, has profoundly impacted the global economic sector. Initially, the war triggered a direct blow to global energy security, prompting a gradual increase in oil and gas prices to alleviate the strain on state budgets (Rojas-Romagosa, 2024). This shift towards agile fiscal economics aligns with efforts to bolster energy security and stimulate oil and gas exploration in border regions. Moreover, the invasion unleashed a significant energy crisis, magnified by COVID-19’s effects, affecting not only Europe but also nations worldwide, particularly those least equipped to absorb the heightened costs. The resultant trade restrictions and disruptions in Russian energy exports to Europe have forced EU countries to confront both risks and opportunities (European Parliament, 2024). While the turmoil underscores the dangers of dependence on Russian energy, it also highlights the imperative for diversification and investment in alternative energy sources. This crisis demands coordinated efforts to address supply disruptions and stabilize energy markets to mitigate the far-reaching economic consequences (Centre, 2023). While underscoring the perils of overreliance on Russian energy supplies, this crisis catalyzes a compelling imperative for diversification and investment in alternative energy sources. In navigating these turbulent waters, concerted international cooperation is imperative to mitigate

supply disruptions and stabilize energy markets, thereby mitigating the far-reaching economic ramifications.

The weaponization of energy in the context of Russia's conflict with Ukraine has sent shockwaves through the global economy, particularly in the energy sector. Russia, as the world's second-largest oil producer and a major natural gas exporter, wields considerable influence in global energy markets (Brown et al., 2023). The eruption of hostilities and subsequent US energy sanctions against Russia have triggered a significant upheaval, resulting in a surge in crude oil prices. This escalation has not only disrupted the energy market but has also reverberated across other economic channels, including the commodity and stock markets, and international trade. These ripple effects underscore the interconnectedness of global economic systems. Despite efforts to analyze and quantify the impact of such extreme events using frameworks like EMC, challenges persist in accurately assessing their full economic ramifications (Foucart, 2024). Current methods, such as empirical mode decomposition (EMD), although widely used, are hindered by imprecise calculation parameters, leading to deviations in the analysis of extreme positions within economic data sets (Andreas Glunz, 2022). As such, there is a pressing need for more robust analytical tools and methodologies to comprehensively understand the complex interplay between geopolitical conflicts, energy markets, and the broader global economy. Various analytical methods have been employed to assess further impacts on the economy, particularly on crude oil prices (Centre, 2023). The multiresolution causality test has revealed a significant one-way causal relationship between intrinsic mode functions (IMFs) of geopolitical risk (GPR) and crude oil prices, underscoring the intricate interplay between geopolitical events and energy markets. Despite the absence of a direct causal relationship between the US dollar index and crude

oil prices, the war has nonetheless catalysed a substantial rise in crude oil prices, indicating that the analysed impact may represent a conservative estimate, with the actual impact potentially surpassing the measured value. Event analysis further elucidates the profound effect of the Russia-Ukraine conflict on crude oil prices, particularly in amplifying high-frequency fluctuations. This escalation led to a considerable increase in both West Texas Intermediate (WTI) and Brent crude oil prices, with the war accounting for a significant portion of the fluctuation during the event window (Brown et al., 2023). The impact on Brent crude oil prices has been particularly pronounced, given Europe's substantial reliance on Russian oil imports (Rogoff, 2022). This dependency has rendered Europe vulnerable to price shocks, with the war exacerbating the price differential between Brent and WTI crude oil. While high-frequency IMF fluctuations may induce transient effects on crude oil prices, the broader impact of the war has fundamentally reshaped long-term trends, underscoring the enduring repercussions of geopolitical conflicts on global energy markets and economies (Adhityo Rizaldi et al., 2023).

As the world's second-largest oil producer, Russia's initiation of the conflict has significantly disrupted the global energy market, drawing scrutiny from both industry and academic circles. The breakdown of direct supply chains with Russia and Ukraine, alongside disruptions in supply routes to Asia, has resulted in substantial price increases across various sectors, including raw materials, energy, intermediate products, and transportation services. In the European Union (EU), the economic recovery post-COVID-19 has been hindered by the conflict in Ukraine, with growth rates falling short of projections (Besson, 2022). The EU's response, including sanctions and contingency measures, emphasizes the severity of the situation, with efforts focused on supporting Ukraine through financial, economic, diplomatic, humanitarian, and military aid

(European Parliament, 2024). As of January 2024, nearly €88 billion has been allocated for these purposes, with further commitments, such as the decision to open accession talks with Ukraine, highlighting the EU's commitment to stability in the region (Foucart, 2024).

While facing these challenges, Russia remained as the third largest producer of oil in 2023, behind the United States and Saudi Arabia, and remained the biggest net exporter globally. Throughout 2023, Russian export volumes of oil remained stable at roughly 7.5 million barrels per day, with a slight lost in crude offset by an equivalent gain in oil products. Exports decreased significantly to the EU, the US, the UK, and OECD Asia to negligible levels of 4.3 million barrels lower than their pre-war average per day. This was combatted by a sharp increase of exports to new customers such as India, China, Turkey, and the Middle East (Vatman & Hart, 2024).

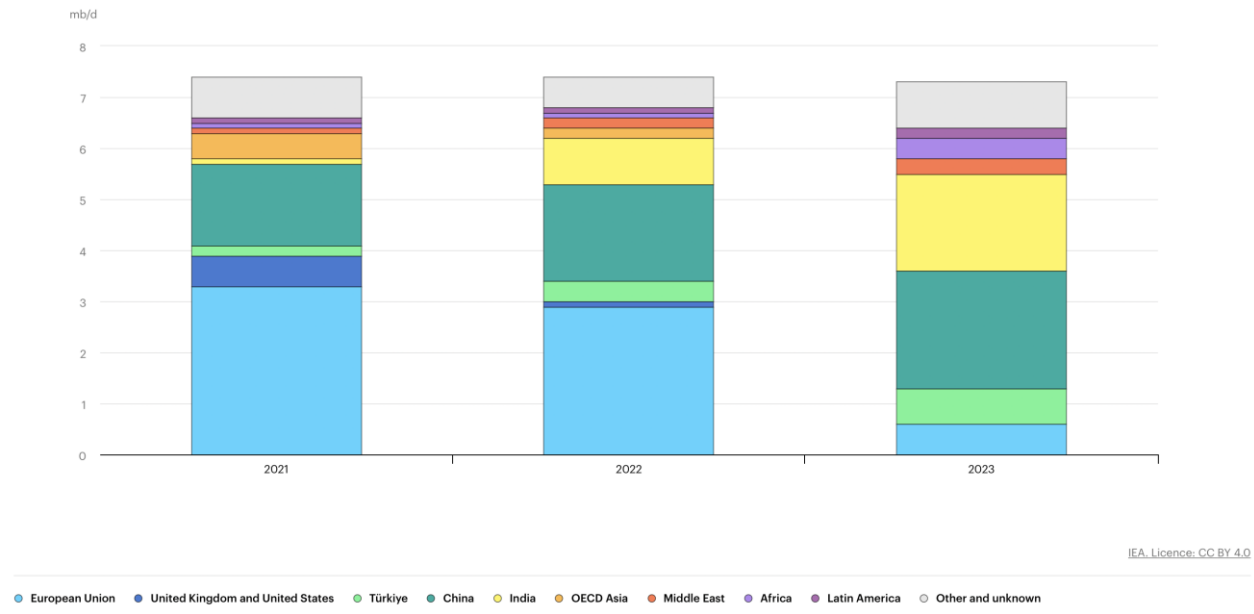

Figure 2: Average Russian Oil Exports by Country and Region, 2021-2023.

Despite experts' forecasts, Russia's economy has been experiencing robust growth after the contraction of 2022 (Rich, 2024). This has been fueled by an increase in public

spending which entails an increase in military spending. Military spending has played a role in maintaining this growing economic standard for Russia (Rich, 2024). This has had a multiplying effect on industrial sectors in the country allowing them to benefit from the war in Ukraine. Military spending along with the continued revenues from oil and gas exports have sustained the country's economic resurgence (Rich, 2024). This growth stemming from ramped-up spending on the military for over two years leads economists to question the sustainability of this growth and the collateral effects it may have in the long run (Garver, 2024). Russia's economic growth rate was reported by the National Statistics Agency (Rosstat) at 3.6% and 3% by the IMF in 2023. This has led the IMF to increase its forecast for 2024 from 2.6% given the country's strong economic performance (Rich, 2024). Based on this, the Russian economy is expected to witness continued growth in 2024 as it undergoes this fiscal stimulus (Garver, 2024). Shifting from a federal budget of $270 billion in 2021, the Russian government is now spending $353.8 billion in 2023 (Garver, 2024). This budget allocates funds for supporting defense industries, employment, paying people who joined the armed forces, paying families who have lost service members, and paying families of injured service members. Some of the outlays discussed were paid by increasing tax revenues leading the national wealth fund to decrease and by borrowing, putting the state at a historically high deficit at nearly 10% of the overall budget (Garver, 2024). As inflation rises, increasing prices too, these changes have been somewhat offset by compensating workers with higher pay since unemployment has reached near historic lows (Garver, 2024).

CHAPTER 5

CONCLUSION

5.1. Implications

The research findings highlight the implications of energy weaponization on various dimensions of energy sustainability, particularly in the context of the Russia-Ukraine conflict case. This thesis presents a comprehensive holistic analysis of geopolitical tensions and energy diplomacy, which show the links between energy security, socio-political stability, and environmental sustainability. The case study of the Russia-Ukraine conflict is a compelling example that clearly shows how the weaponization of energy can disrupt global energy markets, exacerbate geopolitical tensions, and create the consequential significant challenges on energy sustainability.

By adopting both methodologies of qualitative and quantitative research, this study provides insights into the socio-political, environmental, and economic impacts of energy weaponization, thus potentially informing future policy making and strategies aimed at mitigating its negative consequences. Moving forward, this thesis uniquely addresses that the implications of energy weaponization on state sustainability requires to be approached holistically that integrates the three pillars of weaponization of political, environmental, and economic considerations, while also fostering international cooperation and dialogue to promote energy security and stability in an increasingly volatile geopolitical landscape.

5.2. Limitations

This research aims to shed light on the multifaceted implications of energy weaponization in the context of the Russia-Ukraine conflict, it is necessary to discuss certain limitations faced within the methodology and scope of the study.

The reliance on the case study and historical accounts may introduce biases, as perspectives may vary based on the backgrounds and sources of information. Efforts to maintain an impartial comparison of accounts are crucial to ensure the integrity of the research findings. The ongoing and dynamic nature of the conflict presents challenges in capturing real-time developments and interpreting geopolitical developments and motivations. As such, the analysis may be subject to interpretation based on recent events and evolving narratives. Moreover, the focus on a specific case study, namely the Russia-Ukraine conflict, may limit the generalizability of the findings to other instances of energy weaponization and geopolitical tensions. While this case serves as a convincing example, it is essential to recognize the unique contextual factors at play.

Despite these limitations, this research contributes to a deeper understanding of the interplay between energy, geopolitics, and sustainability, highlighting the need for nuanced approaches to address the challenges posed by energy weaponization in contemporary global affairs.

5.3. Future Research Considerations

While this research has provided insights into the intersectionality of energy weaponization, geopolitical tensions, and sustainability within the context of the Russia-Ukraine conflict, there are several avenues for future research worth exploring. Given the dynamic nature of geopolitical conflicts and energy diplomacy, ongoing monitoring and

analysis are crucial to understanding evolving trends and their implications. Future research could focus on real-time tracking of energy-related developments and their impact on state policies and international relations. Expanding the scope of research beyond the Russia-Ukraine conflict to include other instances of energy weaponization and geopolitical tensions would provide a more comprehensive understanding of the global landscape. Comparative studies across different regions and conflicts could reveal common patterns and unique challenges.

Delving deeper into the socio-economic and environmental consequences of energy weaponization would deepen our understanding of its multifaceted impacts. Future research could explore the long-term implications for energy sustainability, social stability, and environmental resilience in conflict-affected regions. Further, the role of emerging energy technologies, such as renewable energy sources and energy storage systems, in mitigating the risks associated with energy weaponization could offer valuable insights for policymakers and stakeholders. Understanding how alternative energy sources can enhance energy security and reduce geopolitical vulnerabilities is essential for shaping resilient energy systems in the future. In an effort to support future policy decisions, it would be fruitful to understand the role that energy may play in curbing conflicts rather than fueling them through the geopolitical weaponization of energy. Overall, future research endeavors could continue to explore the complex interplay between energy, geopolitics, and sustainability, with a focus on identifying innovative solutions to address the challenges posed by energy weaponization in an increasingly interdependent world.

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