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MAPPING ENERGY: FROM RESOURCES TO GEOPOLITICAL STRATEGY

EDITOR
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PREFACE

The present volume explores the dynamic interplay between energy resources and geopolitical strategy, presenting a multifaceted perspective on how energy shapes global political and economic relations. As the world undergoes profound transformations in energy production, distribution, and consumption, the geopolitical implications of energy security and transition have gained unprecedented importance. This book provides valuable insights into these developments, contributing to scholarly debates and policy considerations on energy and its strategic dimensions.

We express our sincere appreciation to all the contributing authors, whose dedication and expertise have significantly enriched this volume. Their rigorous research and diverse perspectives have ensured that the book reflects both academic excellence and practical relevance.

We also extend our gratitude to UBAK Publishing House for its professional support and commitment to disseminating high-quality academic work. Their contribution has been instrumental in bringing this publication to fruition and making it accessible to a wider scholarly community.

It is our hope that this work will serve as a useful reference for academics, policymakers, and practitioners, fostering deeper understanding and further dialogue on the critical nexus between energy and geopolitics.

Prof. Dr. Salih ÖZTÜRK

July 31, 2025

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MAPPING ENERGY: FROM RESOURCES TO GEOPOLITICAL STRATEGY

INTRODUCTION

In the 21st century, energy is not only a basic requirement for development, it is also a source of power, leverage, and conflict in international relations. As global demand for energy continues to grow, the strategic control of energy resources, transportation routes, and supply chains has become deeply entangled with geopolitics. The term energy geopolitics refers to how geographic and political factors influence the access, distribution, and control of energy resources. Each of these regions presents a unique configuration of energy resources, strategic interests, and international actors. The Eastern Mediterranean has emerged as a hotspot due to newly discovered offshore gas reserves and the complex interplay of regional rivalries. Central Asia, rich in hydrocarbons, sits at the crossroads of competing energy corridors and global powers vying for influence. Meanwhile, the Russia-Ukraine conflict starkly illustrates how energy infrastructure and dependency can become tools of coercion and warfare.

Energy is a foundational need for all nations, underpinning economic development, societal well-being, and national security. However, despite this universal requirement, countries differ significantly in how they approach energy provisioning. These differences arise from varying starting points, resource availability, infrastructure capacities, and strategic priorities.

For example, in the United States, energy policy is heavily influenced by the goals of energy security and independence. In contrast, many developing nations prioritize expanding access to energy for underserved populations. Meanwhile, for some countries, energy strategies are driven by geopolitical ambitions using control over energy resources or transit routes as a tool for political leverage on the global stage.

When discussing energy provision, it's important to recognize that it extends beyond just electrification. Energy systems must also include fuels for generating electricity, powering transportation, and running industrial processes. Among the different sources of energy, natural gas stands out due to its relatively abundant supply, lower carbon emissions compared to coal and oil, and versatility across various sectors. Natural gas plays an increasingly central role in the global energy mix. It can be transported in two main ways: through pipelines from production regions or as liquefied natural gas (LNG)

via tankers across oceans. This dual transportation model introduces both flexibility and geopolitical complexity, influencing international relationships, trade routes, and energy security strategies. This paper explores the geopolitical dimensions of energy through three critical case studies: the Eastern Mediterranean, Central Asia, and the Russia-Ukraine War. Understanding these case studies allows us to grasp how energy politics affect not only regional stability but also global energy security, diplomatic relations, and the structure of the international system. It also reveals the interplay between energy policy, national interest, and multilateral cooperation or confrontation.

The discovery and exploitation of hydrocarbon resources in the Eastern Mediterranean over the past two decades have significantly altered the regional geopolitical landscape. Energy resources have become central to shaping power dynamics, influencing diplomacy, escalating or mitigating conflict, and forging new alliances.

Resource Discoveries and Regional Ambitions Major natural gas discoveries such as Egypt's Zohr field (2015), Israel's Leviathan and Tamar fields, and Cyprus's Aphrodite field have transformed Eastern Mediterranean nations into potential energy exporters. These developments have not only raised the economic aspirations of these states but have also intensified territorial disputes and maritime boundary negotiations, particularly in areas overlapping with exclusive economic zones (EEZs).

The evolving energy map has driven the emergence of strategic trilateral partnerships. One of the most notable is the alliance between Israel, Cyprus, and Greece, which has coalesced around mutual energy interests, such as joint pipeline projects and electricity interconnectors (e.g., the Eastern Mediterranean (EastMed) pipeline). These partnerships are not merely economic but serve broader strategic and security goals, with energy cooperation reinforcing diplomatic cohesion. Egypt, with its existing liquefied natural gas (LNG) infrastructure, has positioned itself as a regional energy hub. Cairo has strengthened relations with both Israel and Cyprus by enabling gas exports through Egyptian liquefaction terminals, thus enhancing its geopolitical leverage.

Turkey, largely excluded from the nascent energy alliances and critical of the EastMed pipeline, has responded with assertive maritime claims and offshore drilling activities in contested waters. Its 2019 maritime delimitation agreement with Libya's Government of National Accord (GNA) further escalated tensions, challenging Greek and Cypriot EEZ claims. Ankara's actions have drawn condemnation from the EU and heightened naval deployments in the region, highlighting how energy exploration can act as a catalyst for geopolitical friction. These tensions underscore the potential for energy resources to fuel conflict, particularly in areas where legal ambiguities persist.

Institutionalizing Cooperation: The East Mediterranean Gas Forum (EMGF)The formation of the East Mediterranean Gas Forum (EMGF) in 2019, comprising Egypt, Cyprus, Greece, Israel, Italy, Jordan, and Palestine, represents a diplomatic effort to coordinate energy development and foster collaboration. Notably, Turkey has been excluded from this framework, underscoring the dual role of energy forums as both instruments of cooperation and exclusion.The EMGF's institutionalization of energy cooperation contributes to regional stability by providing a platform for dialogue, but it simultaneously reinforces geopolitical alignments that may deepen existing divisions.

Great Power Involvement and Energy Security Global powers such as the United States, Russia, and the European Union have vested interests in Eastern Mediterranean energy routes. The EU sees the region as a potential alternative to Russian gas imports, framing energy cooperation as part of broader energy security and diversification strategies. Meanwhile, U.S. engagement has included backing for regional energy projects and supporting the trilateral Greece–Cyprus–Israel axis. These external interests serve to internationalize the region's energy geopolitics, adding layers of complexity to local disputes.

In the Eastern Mediterranean, the interplay between energy resources and geopolitics illustrates how natural wealth can reshape diplomatic alignments and provoke contestation. While the development of hydrocarbons offers the promise of economic growth and regional cooperation, it also raises the stakes of territorial disputes and invites external intervention. As such, energy

resources serve as both opportunities and sources of tension in an already fragmented geopolitical space.

Eastern Mediterranean: Gas Discoveries and Maritime Tensions

The discovery of significant offshore natural gas reserves in the Eastern Mediterranean particularly by Israel, Egypt, and Cyprus has transformed the region into a strategic energy hub. However, overlapping maritime claims, especially involving Turkey and Greece, have intensified geopolitical rivalries.

Regional Complexity:

- Competing Exclusive Economic Zone (EEZ) claims, especially between Turkey and Cyprus.
- Formation of the East Mediterranean Gas Forum (EMGF) excluding Turkey, escalating tensions.
- Infrastructure diplomacy, such as the proposed EastMed pipeline, faces both technical and political hurdles.

Global Consequences:

- Potential to diversify European gas imports away from Russia.
- Increased involvement of external powers like the U.S., EU, and China in regional energy politics.
- Risk of militarization and conflict in a densely contested maritime space.

Central Asia: The Tug-of-War Over Pipeline Politics
Central Asia, rich in oil and gas (notably Kazakhstan and Turkmenistan), is a strategic corridor for energy transit between East and West. The region is a focal point for competition among Russia, China, and the West.

Regional Complexity:

- China's Belt and Road Initiative (BRI) has deepened its energy ties with Central Asian states, especially through pipelines like the Central Asia–China gas pipeline4.
- Russia seeks to maintain influence via legacy infrastructure and political alliances.
- Internal instability and governance issues in Central Asian republics complicate long-term energy cooperation.

Global Consequences:

- China's growing energy footprint challenges Western and Russian influence.
- Energy security concerns for Europe and South Asia, especially in light of potential supply disruptions.
- The region's role in shaping future green energy transitions and rare earth supply chains.

Russia–Ukraine War: Energy as a Weapon and Catalyst

Russia's 2022 invasion of Ukraine has profoundly reshaped global energy geopolitics. Energy infrastructure became both a target and a tool of warfare.

Regional Complexity:

- Russia's gas cutoffs to Europe and attacks on Ukrainian energy infrastructure.
- Ukraine's strategic role as a transit country for gas pipelines.
- EU's scramble to reduce dependence on Russian fossil fuels6.

Global Consequences:

- Accelerated energy diversification and green transition in Europe (e.g., REPowerEU).
- Reconfiguration of global LNG markets, with the U.S. and Qatar stepping in.
- Sanctions and price caps on Russian oil and gas reshaping global energy trade patterns.

1. THEORITICAL FRAMEWORK

The 21st century has witnessed a profound transformation in the global energy landscape, marked by shifting power dynamics, technological advancements, and intensifying geopolitical rivalries. At the heart of this transformation lies the intricate interplay between energy resources and international politics - a domain best understood through the theoretical lenses of geopolitical realism, complex interdependence, and energy security.

Geopolitical realism remains a foundational lens in international relations, emphasizing the primacy of state interests, power asymmetries, and

the anarchic nature of the international system. In the context of energy, realism interprets resource control as a zero-sum game, where states seek to dominate supply chains and transit routes to enhance national power. This is starkly illustrated in the Russia–Ukraine war, where Russia's weaponization of natural gas exports particularly through the Nord Stream pipelines has underscored the strategic utility of energy as a coercive instrument. The European Union's subsequent diversification efforts and sanctions regime reflect a realist response to perceived threats to sovereignty and regional stability

The concept of energy security defined as the uninterrupted availability of energy sources at an affordable price has become increasingly salient in an era of geopolitical volatility and climate imperatives. The Eastern Mediterranean exemplifies this tension, as newly discovered gas reserves have triggered both cooperative ventures, such as the East Mediterranean Gas Forum (EMGF), and geopolitical disputes involving Turkey, Greece, Cyprus, and Israel over maritime boundaries and resource control. These evolves nature of energy geopolitics, where traditional power politics coexist with interdependent networks and security dilemmas. As the global energy transition accelerates, understanding these theoretical frameworks is essential for analyzing the strategic behavior of states and the emerging architecture of international energy governance.

The global energy transition marked by a shift from fossil fuels to renewable energy sources has profound implications for traditional energy geopolitics. This transformation is not merely technological or environmental; it is fundamentally geopolitical, reshaping power dynamics, alliances, and strategic vulnerabilities. The following case studies from the Eastern Mediterranean, Central Asia, and the Russia–Ukraine war illustrate how these shifts are unfolding.

Eastern Mediterranean: Resource Competition and Regional Realignment

The discovery of offshore natural gas reserves in the Eastern Mediterranean has intensified geopolitical competition among regional actors such as Israel, Cyprus, Greece, Turkey, and Egypt. The formation of the East Mediterranean Gas Forum (EMGF) exemplifies efforts to institutionalize

cooperation among like-minded states. However, Turkey's exclusion from the EMGF and its competing maritime claims have led to heightened tensions, particularly with Greece and Cyprus.

The global energy transition complicates this dynamic. While natural gas is often framed as a "bridge fuel" in the transition to renewables, long-term investment in gas infrastructure may become economically unviable as renewables gain ground. This raises the stakes for Eastern Mediterranean states to monetize their gas reserves swiftly, potentially exacerbating regional rivalries. Moreover, the EU's decarbonization agenda may reduce demand for Eastern Mediterranean gas, undermining the region's strategic energy leverage.

Central Asia: Strategic Corridors and Great Power Competition

Central Asia's vast hydrocarbon reserves particularly in Kazakhstan and Turkmenistan have historically positioned the region as a strategic energy corridor. However, the rise of China's Belt and Road Initiative (BRI) and its investments in both fossil fuel and renewable energy infrastructure have reoriented regional energy geopolitics. China's diversification strategy, aimed at reducing dependence on maritime routes, has elevated Central Asia's importance in Beijing's energy security calculus. Simultaneously, the global shift toward renewables introduces new geopolitical considerations. Central Asian states are exploring solar and wind potential, but face challenges related to infrastructure, governance, and foreign investment. The transition also risks marginalizing fossil fuel-dependent economies unless they adapt swiftly. The region thus becomes a theater for geopolitical contestation among China, Russia, the U.S., and the EU, each seeking influence over its evolving energy landscape.

Russia–Ukraine War: Energy as a Weapon and Catalyst for Transition

The Russia–Ukraine war has starkly illustrated the entanglement of energy and geopolitics. Russia's use of energy exports—particularly natural gas—as a geopolitical tool has prompted a fundamental rethinking of energy security in Europe. The EU's REPower EU initiative aims to reduce dependence on Russian fossil fuels by accelerating the deployment of

renewables and diversifying energy sources. This conflict has catalyzed the energy transition in Europe, not merely as a climate imperative but as a strategic necessity. The war has exposed the vulnerabilities of fossil fuel interdependence and underscored the geopolitical advantages of decentralized, domestically produced renewable energy. However, it has also triggered short-term setbacks, such as increased coal use and LNG imports, highlighting the complex interplay between energy security and decarbonization.

The global energy transition is reshaping traditional energy geopolitics by altering the sources of power, the geography of energy flows, and the strategic priorities of states. In the Eastern Mediterranean, it intensifies competition over transitional fuels; in Central Asia, it reconfigures great power rivalries; and in the Russia–Ukraine war, it accelerates the strategic pivot toward renewables. These case studies evolve need for nuanced, region-specific analyses to understand the geopolitical ramifications of the energy transition. As the world moves toward a low-carbon future, The global energy transition marked by a shift from fossil fuels to renewable energy sources has profound implications for traditional energy geopolitics. This transformation is not merely technological or environmental; it is fundamentally geopolitical, reshaping power dynamics, alliances, and strategic vulnerabilities geopolitics will not disappear, it will evolve.

Eastern Mediterranean had Recent gas discoveries (e.g., Leviathan, Zohr) and their geopolitical implications. Maritime boundary disputes (e.g., Turkey-Greece-Cyprus-Israel tensions). The role of multilateral platforms like the East Mediterranean Gas Forum (EMGF). Influence of external actors such as the EU and the US.

Central Asia Energy-rich states like Kazakhstan and Turkmenistan and their export routes. Russia's historic dominance versus China's expanding economic footprint (e.g., through the Belt and Road Initiative and pipelines like Central Asia–China Gas Pipeline). Regional infrastructure projects and pipeline politics, including those bypassing Russia.

Russia–Ukraine War Strategic weaponization of gas supplies by Russia and Europe's dependency. Impact on EU energy diversification strategies and push for renewables. Ukraine's role as a key transit country and the Nord Stream pipeline controversies.

Comparative Analysis there are Similarities Resource leverage as a political tool, involvement of external powers, energy as a catalyst for alliance formation and rivalry.

There are Differences Nature of energy reserves (offshore vs. onshore), geopolitical fragmentation, level of infrastructure maturity, and regional integration. Assess how geography, history, and market access shape the geopolitical significance of energy in each region.

2. THE EASTERN MEDITERRANEAN

The Eastern Mediterranean region holds immense geopolitical significance due to its strategic maritime location, historical legacies, diverse cultures, and vast energy resources. This dynamic area has become a focal point of regional and international competition, particularly concerning maritime boundaries, energy exploration, security collaborations, and geopolitical alignments. The Eastern Mediterranean in Energy Geopolitics in a Contested Maritime Space . The Eastern Mediterranean energy landscape is shaped by a constellation of regional and supranational key actors, including Cyprus, Greece, Turkey, Israel, Egypt, and the European Union (EU). Each actor brings distinct strategic interests, historical grievances, and energy ambitions to the table, making the region a complex arena of both cooperation and contestation. The key actors influencing have developed complex and, at times, contentious relations, deeply intertwined with historical narratives and evolving strategic interests.

Cyprus: A Divided Island with Strategic Importance

Cyprus, situated at the crossroads of Europe, Asia, and Africa, has long been a center piece in regional politics. Since 1974, the island has remained divided between the internationally recognized Republic of Cyprus and the Turkish Republic of Northern Cyprus (recognized only by Turkey). Cyprus's Exclusive Economic Zone (EEZ), rich in hydrocarbons, has been a point of

tension, particularly with Turkey disputing certain claims. The Republic of Cyprus has sought alliances with other Eastern Mediterranean nations and the EU to strengthen its maritime claims and energy development programs, positioning itself as a vital energy transit and security hub.

Greece: Maritime Aspirations and Regional Partnerships

Greece plays a prominent role in the Eastern Mediterranean through its expansive coastline and archipelagic geography. It has advocated for international law, particularly the United Nations Convention on the Law of the Sea (UNCLOS), in delimiting maritime boundaries. Greece has deepened diplomatic and defense cooperation with Cyprus, Israel, and Egypt through trilateral and quadrilateral mechanisms. The Greece-Turkey maritime disputes, particularly over the Aegean Sea and Eastern Mediterranean, remain a central element of regional friction and a recurring subject of NATO and EU mediation efforts.

Turkey: Regional Ambitions and Strategic Assertiveness

Turkey views the Eastern Mediterranean as critical to its national security and regional leadership ambitions. Ankara's maritime doctrine—dubbed "Blue Homeland" (Mavi Vatan) seeks to project influence over broad swaths of the Mediterranean and assert Turkey's right to access resources and trade routes. Turkey's activities, including drilling in contested waters and deploying naval forces near Cyprus, have drawn international criticism and EU sanctions, while also elevating its strategic relevance as a pivotal NATO member and energy corridor between East and West.

Israel: Energy Discoveries and Strategic Realignment

Israel's emergence as an energy exporter, with substantial gas finds such as the Leviathan and Tamar fields, has shifted its strategic calculus in the region. Collaborative initiatives with Greece and Cyprus, including the planned EastMed Pipeline, reflect a broader realignment toward regional cooperation based on energy and security. Additionally, Israel has leveraged its naval capabilities and advanced technology to protect offshore assets, contributing to

a regional balance of power increasingly shaped by energy geopolitics and shared concerns over regional security.

Egypt: A Regional Pillar with Growing Influence

Egypt plays a dual role as a North African and Eastern Mediterranean power. The discovery of the Zohr gas field, one of the largest in the Mediterranean, has elevated Egypt's role in the region's energy architecture. Egypt has actively pursued regional partnerships, notably through the East Mediterranean Gas Forum (EMGF), which it co-founded with Cyprus, Greece, and others. Cairo's strategy emphasizes regional cooperation, energy diplomacy, and securing its maritime borders amid broader security concerns in the region and beyond.

2.1 The European Union: Regulatory Authority and Diplomatic Actor

The EU maintains a significant presence in Eastern Mediterranean affairs, primarily through its member states (notably Greece and Cyprus) and broader policy frameworks. The bloc has supported energy diversification through projects like the EastMed Pipeline and has called for adherence to international maritime law. EU-Turkey relations, often fraught with tension, are central to regional diplomacy, while the EU's role as a mediator and regulator influences the dynamics of migration, trade, and regional security. In conclusion The Eastern Mediterranean remains a region of strategic convergence and contestation. The interplay of historical grievances, legal disputes, energy ambitions, and shifting alliances has created a complex geopolitical mosaic. A sustainable future in the region hinges on adherence to international law, constructive diplomacy, and inclusive frameworks for energy and security cooperation. As new alignments form and old tensions persist, the role of external actor technological advancements, and multilateral institutions will continue to shape the trajectory of the Eastern Mediterranean's geopolitical landscape.

Overview of recent offshore natural gas discoveries

Over the past two decades, the Eastern Mediterranean has emerged as a significant frontier for offshore natural gas exploration. It includes Leviathan and Tamar fields (Israel) Among the largest gas finds in the region, these fields have enabled Israel to become a net energy exporter the Mediterranean and has revitalized Egypt's role as a regional energy hub. Aphrodite field (Cyprus) Though smaller in scale, this field has strategic importance for Cyprus's energy aspirations and regional partnerships. These discoveries have raised the prospect of transforming the region into a key supplier of gas to Europe, particularly as the EU seeks to diversify away from Russian energy sources.

Territorial Disputes and Maritime Law

The promise of offshore energy has intensified longstanding disputes over Exclusive Economic Zones (EEZs) and maritime boundaries. Central to these tensions are: Competing EEZ claims between Cyprus and Turkey, particularly around the island's southern waters. Turkey's rejection of the United Nations Convention on the Law of the Sea (UNCLOS) framework, which underpins most regional EEZ agreements. The 2019 Turkey-Libya maritime deal, which challenged Greek and Cypriot claims and escalated regional tensions. These disputes have led to naval standoffs, diplomatic friction, and competing exploration activities, complicating efforts to develop energy resources cooperatively.

The EastMed Pipeline and Regional Cooperation

The proposed EastMed pipeline, backed by Cyprus, Greece, and Israel, aims to transport Eastern Mediterranean gas to Europe via Greece and Italy. While politically significant, the project faces economic and technical hurdles, including: High construction costs and deep-sea engineering challenges. Questions about long-term demand amid Europe's green transition; The U.S. withdrawal of support in 2022, citing environmental and economic concerns.
Nevertheless, the East Mediterranean Gas Forum (EMGF) comprising Egypt, Israel, Cyprus, Greece, Italy, Jordan, and Palestine has emerged as a platform for regional dialogue and coordination, offering a counterweight to Turkish exclusion and unilateralism.

External Powers and Strategic Influence

The Eastern Mediterranean has attracted the attention of global powers. The United States has historically supported regional energy cooperation, particularly among EMGF members, though its recent pivot toward climate diplomacy has tempered its enthusiasm for fossil fuel infrastructure. Russia maintains a strategic interest in the region, both as a competitor in the European gas market and through its military presence in Syria. Moscow's approach is characterized by balancing relationships with Turkey, Egypt, and Israel. The EU views the region as critical to its energy diversification strategy but is also constrained by internal divisions and its broader climate commitments.

The Eastern Mediterranean exemplifies the intersection of energy potential and geopolitical complexity. While natural gas discoveries offer economic promise, unresolved territorial disputes and shifting global energy priorities continue to shape the region's strategic trajectory.

3. THE CENTRAL ASIA

Central Asia, comprising the five post-Soviet republics - Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan has become a focal point for regional and global powers due to its rich natural resources, strategic location, and shifting political alliances. Among the most prominent actors influencing this region are Kazakhstan, Turkmenistan, Uzbekistan, China, Russia, and the European Union (EU). **Kazakhstan** As the largest country in Central Asia, both in terms of area and economy, Kazakhstan plays a pivotal role in shaping regional policy. With vast reserves of oil, natural gas, uranium, and other minerals, Kazakhstan has pursued a multi-vector foreign policy, balancing ties with Russia, China, the West, and neighboring Central Asian states. Astana is also a founding member of the Eurasian Economic Union (EAEU) and actively seeks investment to develop its transit infrastructure under China's Belt and Road Initiative (BRI).

Turkmenistan

Turkmenistan follows a policy of official neutrality, recognized by the United Nations in 1995. Despite its insular posture, the country is rich in natural

gas and seeks export diversification beyond Russia. Recent efforts to build the Trans-Caspian Gas Pipeline and strengthen links with China and South Asia underscore Turkmenistan's desire to become a more active energy supplier. However, limited political openness and infrastructure constraints hinder its broader regional influence.

Uzbekistan

Uzbekistan, the most populous Central Asian republic, has emerged as a proactive player in regional diplomacy since President Shavkat Mirziyoyev assumed office in 2016. The country has initiated domestic reforms, improved relations with its neighbors, and increased cooperation with external powers. Uzbekistan's strategic location makes it a key transit point for trade and energy projects, and its engagement with both Russia and the West reflects its balancing act in foreign policy.

China

China's engagement with Central Asia has deepened significantly since the launch of the Belt and Road Initiative in 2013. Beijing views the region as essential for overland trade routes and energy supply security. Chinese investments in infrastructure, energy, and digital technologies are transforming local economies, though concerns persist regarding debt dependence and political influence. China also cooperates with Central Asian states through the Shanghai Cooperation Organisation (SCO).

Russia

Russia has traditionally viewed Central Asia as part of its sphere of influence, dating back to Tsarist and Soviet times. Despite reduced influence following the Soviet collapse, Moscow remains a key security and economic partner. It maintains military bases in Kyrgyzstan and Tajikistan and exerts soft power through language, media, and labor migration networks. Russia's role in the Collective Security Treaty Organization (CSTO) and EAEU underscores its enduring presence in the region.

Although geographically distant, the EU has steadily expanded its engagement in Central Asia, focusing on sustainable development, governance,

and human rights. Its 2019 Strategy on Central Asia emphasizes connectivity, environmental resilience, and rule-of-law partnerships. The EU supports infrastructure and educational programs and seeks to balance the growing influence of Russia and China by offering alternatives that align with democratic values and market economics.

This complex interplay among regional and external actors highlights Central Asia's role as a strategic crossroads. The balance of power remains fluid, shaped by energy politics, infrastructure development, and competing visions for regional order.

3.1 Strategic Importance of Oil and Gas Pipelines

Central Asia holds substantial reserves of hydrocarbons, particularly in Kazakhstan, Turkmenistan, and Uzbekistan, rendering the region critical in the global energy landscape. The landlocked nature of these states necessitates pipeline diplomacy, where export routes are political as much as infrastructural decisions.

Central Asia–China Gas Pipeline

Operational since 2009, this pipeline originates in Turkmenistan and traverses Uzbekistan and Kazakhstan before entering China's Xinjiang province. It has reoriented Turkmen gas exports away from traditional Russian routes, enabling Beijing to secure upstream control over critical energy flows while providing Central Asian producers with market diversification.

Baku–Tbilisi–Ceyhan (BTC) Pipeline

Though technically bypassing Central Asia, the BTC pipeline has symbolic importance as an alternative export route for Caspian oil. It originates in Azerbaijan and passes through Georgia and Turkey, delivering crude to the Mediterranean. These pipelines are more than conduits for energy; they serve as instruments of sovereignty, influencing alignments with Russia, China, and Western actors.

Influence of China's Belt and Road Initiative (BRI)

The launch of the Belt and Road Initiative in 2013 significantly expanded China's economic footprint in Central Asia. Through massive infrastructure

investments—including roads, railways, and energy projects—Beijing aims to secure stable energy imports, regional stability, and increased political leverage. Energy infrastructure has featured prominently in BRI-related projects. Chinese firms have invested in pipeline networks, refineries, and renewable energy, cementing long-term energy interdependence. For Central Asian states, BRI funding presents opportunities for economic development and increased bargaining power vis-à-vis Russia and Western partners. However, concerns about debt dependency and the opacity of bilateral agreements have prompted greater scrutiny of Beijing's strategic intentions.

Russian Dominance vs. Growing Chinese Investment

Since the dissolution of the Soviet Union, Russia has viewed Central Asia as part of its 'near abroad', employing tools ranging from security alliances (e.g., the Collective Security Treaty Organization) to cultural and economic ties. For years, Russian control over pipeline infrastructure particularly Transneft's monopoly on export routes ensured enduring influence. However, China's rise as a financier, builder, and market has fundamentally altered the balance of power. Chinese investment now surpasses Russian economic involvement in several Central Asian countries, particularly in energy infrastructure. For instance, Turkmenistan exports most of its gas to China, not Russia. This dynamic has not resulted in outright geopolitical confrontation but rather a delicate equilibrium where Central Asian states navigate between the two powers, extracting benefits while avoiding overdependence.

Energy as a Tool for State-Building and Regional Balancing

Post-Soviet Central Asian states have relied on energy revenues not only for economic development but also for consolidating national sovereignty and regime legitimacy. Control over extraction and export has enabled elite patronage systems and the strengthening of state institutions.

Moreover, energy has been employed as a tool for regional balancing. Kazakhstan and Uzbekistan, for example, have pursued multi-vector foreign policies, leveraging relationships with China, Russia, and the West to maintain strategic autonomy. Energy partnerships form the cornerstone of such balancing strategies.

In this context, energy is not merely a commodity but a source of leverage, identity, and state survival.The strategic manipulation of energy flows and partnerships has allowed Central Asian governments to assert their independence and shape regional geopolitics in their favor. In this context, energy is not merely a commodity but a source of leverage, identity, and state survival. The strategic manipulation of energy flows and partnerships has allowed Central Asian governments to assert their independence and shape regional geopolitics in their favor. This case study of Central Asia underscores the centrality of energy geopolitics in post-Soviet statecraft. Pipelines map not only geography but alignments, investments signify influence and energy flows translate into sovereignty and strategy.

4. THE RUSSIA-UKRAIN WAR

The Russia-Ukraine war has not only reshaped geopolitical alignments but also exposed the vulnerabilities of Europe's long-standing dependence on Russian natural gas and oil. Understanding this dependency requires a historical lens that traces the evolution of energy ties between Europe and Russia, particularly since the Cold War.

Historical Background of Europe's Energy Dependency on Russia Soviet Legacy and Pipeline Diplomacy Europe's reliance on Russian energy began during the Cold War, when the Soviet Union developed extensive oil and gas infrastructure to supply Western Europe. Key projects like the Druzhba oil pipeline (1964) and the Urengoy–Pomary–Uzhhorod gas pipeline (1984) symbolized a pragmatic economic relationship that transcended ideological divides. Western Europe, particularly Germany and Italy, benefited from stable and affordable energy, while the USSR gained hard currency and political leverage.

Post-Soviet Continuity and Expansion After the Soviet Union's dissolution in 1991, Russia inherited the energy infrastructure and continued to supply Europe. The 1990s and early 2000s saw deepening ties through long-term contracts and the construction of new pipelines such as Nord Stream 1 (completed in 2011), which directly connected Russia to Germany via the Baltic Sea, bypassing transit countries like Ukraine and Poland.

Strategic Vulnerabilities and Political Leverage Russia's dominance in Europe's energy mix—accounting for over 40% of EU gas imports and 27% of oil imports before 2022—created strategic vulnerabilities. Disputes with transit countries (notably Ukraine in 2006 and 2009) led to supply disruptions, highlighting the geopolitical risks of overreliance on a single supplier.

These incidents not only revealed the fragility of energy infrastructure but also underscored how energy interdependence can be weaponized in geopolitical rivalries. Empirical evidence reinforces this connection, demonstrating that the world's leading energy producers and consumers also rank among the top military investors—illustrating the structural overlap between energy power and military capacity (Al & Kaplan, 2025, p. 22). This intersection helps explain why energy security concerns are often deeply intertwined with broader defense and foreign policy strategies, as clearly illustrated by Europe's reaction to the Russia–Ukraine conflict.

The Ukraine War and Energy Realignment The 2022 invasion of Ukraine marked a turning point. Europe responded with sanctions on Russian energy and accelerated efforts to diversify supply. The EU's REPowerEU plan aimed to phase out Russian fossil fuels by 2027, emphasizing LNG imports from the U.S. and Qatar, renewable energy expansion, and infrastructure upgrades. Current Status and Future Outlook By 2024, Russian gas accounted for less than 10% of EU imports, down from 40% in 2021. LNG now comprises over 40% of EU gas imports, with the U.S. as the leading supplier. However, some landlocked countries like Hungary and Slovakia remain partially dependent on Russian pipeline gas, reflecting uneven progress across the bloc.

In sum, Europe's historical dependency on Russian energy was shaped by geography, economics, and political pragmatism. The Ukraine war catalyzed a decisive shift toward diversification and energy sovereignty, though the transition remains complex and uneven. For Europe, the challenge ahead lies in balancing energy security, affordability, and climate commitments in a rapidly evolving geopolitical landscape. Several pivotal events and decisions over the past six decades entrenched Europe's dependency on Russian energy.
A chronological overview of the most significant milestones:

Construction of Soviet Pipelines (1960s–1980s) Druzhba Oil Pipeline (1964)

One of the world's longest oil pipelines, it began transporting Soviet crude to Eastern and Western Europe, laying the groundwork for long-term energy ties.

Urengoy–Pomary–Uzhhorod Gas Pipeline (1984)

This major gas artery connected Siberian gas fields to Europe via Ukraine, becoming a critical supply route.

Post-Soviet Continuity and Gazprom's Rise (1990s)

After the USSR's collapse, Russia inherited the energy infrastructure and state-owned Gazprom emerged as a dominant supplier. Long-term contracts with European utilities ensured stable but increasingly one-sided dependence.

Nord Stream 1 Pipeline (2011)

This direct pipeline from Russia to Germany under the Baltic Sea bypassed transit countries like Ukraine and Poland. It symbolized deepening bilateral energy ties and reduced Europe's leverage in geopolitical disputes.

Gas Disputes with Ukraine (2006 & 2009)

Russia cut off gas supplies during pricing disputes with Ukraine, causing winter shortages in Europe. These crises exposed the fragility of Europe's energy security and its overreliance on Russian transit routes.

Crimea Annexation and Continued Imports (2014)

Despite Russia's annexation of Crimea, Europe continued importing Russian gas and oil. This decision reflected the economic entrenchment of energy ties and the difficulty of rapid diversification.

Nord Stream 2 Controversy (2015–2022)

Though never operational, the Nord Stream 2 pipeline project deepened divisions within the EU and between the EU and the U.S., highlighting the geopolitical stakes of energy dependency.

Full-Scale Invasion of Ukraine (2022)

Russia's invasion triggered a seismic shift. The EU launched the REPowerEU plan to phase out Russian fossil fuels, but the war also revealed how deeply embedded Russian energy was in Europe's economy. These events collectively illustrate how infrastructure, long-term contracts, and political inertia created a dependency that proved difficult to unwind even in the face of escalating geopolitical threats.

The Russia-Ukraine conflict has starkly illustrated how energy infrastructure can be weaponized for geopolitical leverage. Russia's manipulation of gas flows through Nord Stream 1 and the suspension of Nord Stream 2 certification in early 2022 were pivotal moments. These actions were framed as technical or regulatory issues but widely interpreted as coercive tactics aimed at fracturing European unity and deterring support for Ukraine.

The situation escalated with the sabotage of the Nord Stream pipelines in September 2022. Underwater explosions rendered three of the four pipelines inoperable, releasing vast quantities of methane and symbolizing a new era of hybrid warfare targeting critical infrastructure. Investigations by Sweden and Denmark concluded sabotage had occurred, though no actor has been definitively identified1. The attacks coincided with the opening of the Baltic Pipe from Norway to Poland, underscoring the strategic timing.

This weaponization extended to gas diplomacy, with Russia offering discounted gas to sympathetic states while cutting off or reducing supplies to others. The resulting energy insecurity forced Europe to rapidly reassess its energy dependencies.

4.1 European Energy Diversification Strategy

In response, the EU launched the REPower EU initiative, aiming to eliminate Russian fossil fuel imports by 2027. This strategy rests on three pillars:

Infrastructure Expansion: Europe accelerated the construction of LNG terminals, particularly in Germany, the Netherlands, and the Baltics. By 2024, LNG accounted for over 40% of EU gas imports, with the U.S. emerging as the largest supplier.

Diversification of Suppliers: Europe increased imports from Algeria, Qatar, and Norway. Algeria, despite infrastructure and political constraints, remains a key supplier via the Medgaz and Transmed pipelines. Qatar, with its vast LNG capacity and long-term contracts, is poised to expand its role, especially after 2025 when new production from the North Field expansion comes online.

Renewable Energy and Efficiency: The EU raised its 2030 renewable energy target to 45% and committed to producing/importing 20 million tons of green hydrogen. Investments in wind, solar, and biomethane are central to reducing gas demand. However, challenges persist. LNG from Algeria and Qatar has come under scrutiny for high methane emissions, raising concerns about the environmental sustainability of these alternatives.

Shifting Power Dynamics within OPEC+

The war and the ensuing transformation of energy markets have also reverberated through OPEC+, the oil-exporting alliance led by Saudi Arabia and Russia. In an environment of high volatility, OPEC+ adopted a policy of coordinated output cuts, maintaining elevated oil prices amid global uncertainty. This strategy aimed to compensate for declining Russian energy exports to the West, while enhancing collective leverage over global oil markets.

4.2 Several Geopolitical Consequences Emerged

Internal Cohesion Challenges*:* Divergent national interests complicated quota compliance. Countries like Iraq and Nigeria struggled with production shortfalls, while others, including the UAE, lobbied for higher baseline quotas to reflect expanded capacity.

Strategic Flexibility: Russia's participation in OPEC+ served as an avenue to sustain oil revenues despite Western sanctions. Simultaneously, Gulf states positioned themselves as critical energy partners to both Western and Eastern powers, balancing relations with the U.S., China, and India.

Energy and Diplomacy Nexus: OPEC+'s decisions increasingly reflected geopolitical calculus. Oil output became a diplomatic tool, with

production levels indirectly supporting or undermining efforts to stabilize markets in a time of war. The Russia–Ukraine war has underscored the centrality of energy in contemporary geopolitics. Russia's weaponization of energy catalyzed a profound reorientation of Europe's energy policies, reinforcing the nexus between security and sustainability. In parallel, evolving dynamics within OPEC+ continue to influence global energy flows, reflecting broader shifts in the international order. The war has not only redrawn maps of territorial sovereignty but has also redrawn the map of global energy interdependence.

Common Trends Across All Three Regions

Resource Competition All three regions are rich in hydrocarbons, making them hotspots for energy rivalry. Control over reserves whether offshore gas in the Eastern Med, Caspian oil in Central Asia, or pipelines in Ukraine translates into geopolitical leverage. Pipeline Politics Energy transit routes are as contested as the resources themselves. Competing pipeline projects (e.g., EastMed, Nord Stream, BTC) reflect broader strategic alignments and rivalries. External Intervention Major powers (e.g., the U.S., EU, Russia, China, Turkey) are deeply involved, either as investors, security guarantors, or political influencers. External Intervention Major powers (e.g., the U.S., EU, Russia, China, Turkey) are deeply involved, either as investors, security guarantors, or political influencers.

4.3 Role of International Organizations & Legal Frameworks

UNCLOS (United Nations Convention on the Law of the Sea) Central to maritime boundary disputes in the Eastern Mediterranean, thoughnotuniversally ratified (e.g., Turkey is not a signatory). EnergyCharter Treaty: Relevant in Central Asia and Europe, though its effectiveness is debated, especially after Russia's withdrawal.

EU & NATO: The EU has used regulatory tools (e.g., Third Energy Package) to reshapeenergymarkets. NATO's role is more indirect but growing in strategic importance, especially in the Black Sea.

UN & OSCE*:* Active in conflict mediation and monitoring, particularly in Ukraine and the Caucasus.

5. POLICY RECOMMENDATION

Enhancing Regional Cooperation and Multilateral Energy Frameworks Policymakers should prioritize the institutionalization of inclusive regional energy dialogues and cooperative frameworks. In the Eastern Mediterranean, this could involve strengthening platforms like the East Mediterranean Gas Forum (EMGF), fostering dialogue among adversarial actors. In Central Asia, coordination through multilateral organizations such as the Shanghai Cooperation Organisation (SCO) and Eurasian Economic Union (EAEU) should be bolstered to ensure equitable energy governance. Given the lessons from the Russia-Ukraine War, multilateral coordination through entities like the European Union and International Energy Agency (IEA) is vital to promote transparency, collective resilience, and reduced unilateral dependencies. Diversifying Energy Sources and Transit Routes To mitigate vulnerability, states across these regions must pursue diversification of both energy sources and transit routes. In Central Asia, this implies expanding connectivity with South Asia and investing in alternative export channels beyond Russian and Chinese corridors. The Eastern Mediterranean should accelerate LNG (liquefied natural gas) development and trans-regional linkages to European markets. For Europe, reducing dependence on Russian hydrocarbons accelerated since the 2022 invasion of Ukraine requires long-term investment in renewables and strategic partnerships with diversified suppliers.

Strengthening Energy Infrastructure Resilience Against Geopolitical Shocks Energy infrastructure across the three regions must be reinforced to withstand sabotage, cyber threats, and conflict-related disruptions. This includes hardening pipeline security, expanding storage capacities, and enhancing digital surveillance systems. The destruction of pipelines and energy facilities during the Russia-Ukraine conflict has underscored the urgency of building redundancy and emergency response mechanisms into national and transnational infrastructure planning.

Promoting Energy Diplomacy and De-Escalation Mechanisms Energy diplomacy must serve as a tool for de-escalation, not escalation. In the Eastern

Mediterranean, maritime disputes should be addressed through confidence-building measures and adherence to international legal norms such as the United Nations Convention on the Law of the Sea (UNCLOS). Central Asian states can leverage their intermediary roles between East and West to promote strategic stability. In the Russia-Ukraine context, global energy forums should be utilized to maintain open communication channels and prevent further weaponization of energy resources.

CONCLUSIONS

The discovery of offshore gas reserves has transformed the region into a geopolitical hotspot. While the East Mediterranean Gas Forum (EMGF) has fostered cooperation among some states (e.g., Egypt, Israel, Cyprus, Greece), tensions persist—particularly involving Turkey's maritime claims and the unresolved Cyprus issue. Energy has become both a catalyst for regional collaboration and a trigger for diplomatic friction.Central Asia Rich in hydrocarbons, Central Asia is a strategic energy corridor influenced by competing interests from Russia, China, the U.S., and the EU. China's Belt and Road Initiative has deepened its energy ties with the region, while Russia seeks to maintain influence through pipeline politics. However, domestic energy crises in countries like Uzbekistan and Kyrgyzstan highlight infrastructure weaknesses and growing internal demand. Russia–Ukraine War The conflict has profoundly reshaped global energy geopolitics. Europe's urgent pivot away from Russian gas has accelerated investments in renewables, LNG infrastructure, and energy diversification. Russia's use of energy as a geopolitical weapon has backfired, weakening its long-term market position and prompting a redefinition of energy security across the West.

The Future of Energy Geopolitics Amid Climate Change and the Energy Transition The global energy transition is no longer just about decarbonization, it is a strategic imperative. Climate change, technological innovation, and geopolitical shocks are converging to redefine energy security. Diversification of supply chains for critical minerals and clean technologies. Decentralization of energy systems, reducing reliance on single suppliers or transit routes.Green industrial policies (e.g., EU's Green Deal, U.S. Inflation Reduction Act) that blend climate goals with economic competitiveness and national security. The

energy transition is also shifting power dynamics countries with clean tech capabilities, innovation ecosystems, and resilient infrastructure will gain geopolitical leverage, while fossil fuel-dependent states may face economic and political instability.

Coexistence of Geopolitical Stability and Energy Security Geopolitical stability and energy security are not mutually exclusive they are interdependent. To ensure both: Multilateral cooperation must be strengthened, especially in contested regions like the Energy diplomacy should prioritize transparency, legal frameworks (e.g., UNCLOS), and inclusive regional institutions. Investment in resilient, low-carbon infrastructure can reduce the geopolitical risks of energy dependence. Investment in resilient, low-carbon infrastructure can reduce the geopolitical risks of energy dependence. Ultimately, a stable geopolitical environment is essential for a just and secure energy transition. And conversely, a successful transition rooted in equity, innovation, and cooperation can be a powerful force for peace.

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CHAPTER 2
POLITICAL AND ECONOMIC IMPORTANCE OF THE DEVELOPMENT OF THE RENEWABLE ENERGY SECTOR

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INTRODUCTION

This study examines the political and economic importance of the development of the renewable energy sector. Traditional energy sources are not only inexhaustible but also poison the environment even if the most modern technology is used. There is no doubt that the toxic gases released into the atmosphere after the use of existing energy sources play a major role in the damage to the ozone layer, global warming, melting glaciers, deterioration of air quality and other fundamental problems. At this time, the introduction of renewable energy sources is one of the important factors.

Like many economic sectors, renewable energy should also be examined as a separate field, because their unique characteristics and effects are of great importance for the global economy and the environment. First of all, renewable energy sources (solar, wind, biomass, etc.) have an unstable structure and their reliability can vary depending on the seasons and weather conditions. This makes it difficult to supply renewable energy and integrate it into the electricity grid. At the same time, renewable energy projects are closely related to environmental protection, and the development of this sector plays an important role in reducing the effects of global climate change. In addition, renewable energy technologies are rapidly developing, and their economic efficiency requires government support, policy development and private sector participation. This sector is also important in terms of creating new jobs, ensuring energy security and increasing the country's energy independence. Since the renewable energy sector has its own challenges and expectations, it is important to examine it separately for both academic research and public policy formulation.

1. POLITICAL AND ECONOMIC IMPORTANCE OF THE DEVELOPMENT OF THE RENEWABLE ENERGY SECTOR

The natural increase in the world's population naturally leads to an increase in the demand for energy. Traditional energy resources are not inexhaustible, but even when the most modern technology is used, they are observed to be poisoned by the environment. No one doubts that the damage to the ozone layer, global warming, melting of glaciers, deterioration of the

composition of the air and other deteriorations are due to the toxic gases released into the atmosphere by existing energy sources after use. Thus, the contribution of the use of alternative and renewable energy sources to global security, their irreplaceable effect on environmental protection, and their economic efficiency are highly noticeable. Considering the fact that hydrocarbon resources, which have a special importance in meeting our energy needs, are exhaustible, and the negative effects of rising energy prices on the economy, we can see more clearly the importance of alternative and renewable energy sources and the necessity of using them in preserving existing resources for future generations, preventing global climate change, and also in implementing sustainable energy supply. In addition to the depletion of traditional energy sources, their use inevitably has serious negative impacts on the environment. Thus, the gradual depletion of existing traditional energy sources, as well as the high environmental damage caused by their use, create the need to replace these energy sources with alternative and renewable energy sources that are more reliable, inexhaustible and environmentally friendly.

According to the classification of the International Energy Agency (IEA), alternative and renewable energy sources are divided into five groups:

1. Wind energy
2. Solar energy
3. Bioenergy
4. Geothermal energy
5. Hydropower (including tidal power in the oceans and seas)

Taking all this into account, we can consider the traditional energy system based on minerals and nuclear energy as the primary system, and the unconventional energy system based on alternative and renewable energy sources as the new and modern strategic system. [15]

It is certain that renewable energy sources will play a major role in energy production in the future.

Today, all over the world, especially in developed countries, efforts are being made to popularize the use of renewable energies and create awareness in society through various incentives and sample projects. Thus, it is expected that the renewable energy sector market will develop and costs will decrease

within the supply-demand relationship. Increasing energy costs make renewable energies more economical and therefore preferable in many areas.

In order to meet the world's ever-increasing energy needs, scientists have conducted many studies to increase the use of renewable energy sources in every area and have developed projects such as using solar cells to benefit from the sun and windmills to benefit from the wind. In addition to these, projects aimed at using geothermal energy are also gaining importance. Solar energy is one of the most widely preferred renewable energy sources due to its advantages such as not having polluting waste, being locally applicable, ease of operation, not being dependent on foreign sources, not requiring complex technology and having low operating costs.

Due to the widespread use of hydroelectric power plants around the world, and especially the widespread use of river energy, renewable energy sources increasingly include solar and wind energy. Investment in these two areas is growing rapidly. [9]

The economic indicators of using alternative energy sources are somewhat more expensive than the economic indicators of using traditional energy sources. In order to ensure that the use of alternative energy sources is economically viable, the United Nations, the European Union and a number of international organizations have taken very important decisions. [4]

It is true that today, by applying advanced technologies in the use of traditional energy sources, the release of harmful substances into the atmosphere has been partially prevented. But this is not enough. The cardinal solution to the problem is only and only the regular replacement of traditional energy sources with renewable energy sources.

Renewable energy sources are also divided into 2 types: solar and non-solar. Renewable energy sources of solar origin include solar radiation, hydraulic, wind, biomass and ocean (water, wave temperature difference, etc.) energies of rivers. Non-solar energy sources mainly include geothermal energy and tidal energy. Among renewable energy sources, solar energy is more promising due to the scale of its reserves and environmental friendliness. Renewable energy sources (solar, wind, biomass, etc.) have an unstable nature and their sustainability can vary depending on the seasons and weather conditions. This complicates the supply of renewable energy and its integration

into the electricity grid. At the same time, renewable energy projects are closely related to environmental protection, and the development of this sector plays an important role in reducing the effects of global climate change. Also, renewable energy technologies are developing rapidly and require their economic efficiency, government support and private sector participation. This sector is also important in terms of creating new jobs, ensuring energy security and increasing the country's energy independence. The renewable energy sector has its own challenges and prospects Therefore, studying it separately is important for both academic research and public policy formulation.

Both quantitative and qualitative methods in understanding the renewable energy sector can provide information for economic policy. For example, quantitative methods are widely used in the analysis of the renewable energy sector, and these methods allow assessing the development, productivity and efficiency of the sector based on objective indicators. First of all, using statistical analysis methods, it is possible to monitor the production volume of renewable energy sources, their share in energy production and the changing trend from year to year.

When using quantitative methods, researchers are recommended to pay attention to the quality and sources of the data provided, compare different data sources and use alternative methods for the validity of the results. At the same time, including economic and technological factors in the analysis helps to provide a more objective and complete assessment of the renewable energy sector. Qualitative methods, however, are more suitable for policy measures in some cases (for example, the lack of digital data in a specific sector or subsector; the nature of the research question; the purpose of the study, etc.). can be appropriate and efficient. Qualitative methods are methods that allow for in-depth study of objects, processes and socio-economic issues in research, and for understanding their meaning and context. These methods mainly include interviews, focus groups, case studies, text and document analysis and observations. Using these methods in the renewable energy sector, it is possible to learn the opinions of experts working in the field, government agencies and civil society. For example, the effectiveness of government policy measures for the development of renewable energy, the importance of energy infrastructure for local populations and public opinion regarding technology adoption can be

studied in depth with qualitative methods. The use of these methods helps to understand the renewable energy sector not only through statistical indicators, but also from a social and economic perspective. The data collected with qualitative methods allows for better adaptation of energy policy to the needs of society, as this data provides more detailed and in-depth information about socio-economic impacts.

This practice, known as “green energy”, is widespread in the world and According to natural indicators, wind and solar energy have greater potential among alternative energy sources. [8]

In the face of increasingly severe environmental problems, establishing a vital bridge between environmental development and economic development and ensuring that development is "sustainable" has been accepted as the way out for humanity. [5]

Sustainable development is important from a social, economic and cultural perspective when considered for society, and from an ecological perspective when considered within the scope of natural resources. [2]

Sustainable development essentially means establishing a balance between ecology and economy, and ensuring development in a way that will meet the needs of our future generations with whom we will share the same world, without completely depleting natural resources today. In the sustainable development approach, four key issues are addressed together: management of natural resources, protection of the environment, needs of future generations, and social and economic policies.

Achieving development in a country will be achieved by ensuring ecological, economic and social sustainability. In other words, the concept of sustainable development with intergenerational resource use efficiency is an economic development that does not consume natural capital, takes care of the needs of future generations, maintains the balance between the economy and the ecosystem, and is ecologically sustainable, "eco-development". [1]

We need to consider the impact of renewable energy systems on business and the economy, because this is one of the current issues. There are several reasons why this issue is important. First of all, the use of renewable energy resources is an important factor in protecting the environment and ensuring the useful life of future generations. The expansion of projects on systems

operating on the basis of renewable energy sources may lead to increased research and a temporary increase in costs in this area, but business owners will have the opportunity to operate more sustainably in the current market by using this energy system.

If we consider that the most basic basis of the industrial factor is energy, and production is carried out by the industrial sector, the dependence of the economic growth of countries on the production process proves that the energy sector is among the most important factors affecting economic development. Solar, wind, hydroelectric, geothermal and biomass - these are the main elements of the energy pillars that will have a special impact on the health of the earth's surface, the current state of human influence and the future of our world.

If we take a theoretical look at its impact on the country's economy, we can list some of its advantages as follows:

1. ***Sustainability***: We can never be separated from solar radiation, strong winds, heat sources on the earth's surface and other such sources. The existence of such a sustainable source appears as a factor affecting the sustainability of economic processes that depend on energy.
2. ***Environmental benefits*** the use of renewable energy systems reduces the release of large amounts of carbon dioxide into the environment and naturally prevents the diseases that may occur, which leads to a healthier life in the country's economy.
3. ***Changes in economic prices***: Since the use of alternative energy systems eliminates dependence on other countries, the sensitivity of the country's economy to changes in the prices of energy generated through the use of inorganic substances decreases.
4. ***Stability:*** Due to the unbalanced distribution of resources, certain political crises and disagreements between countries, resulting in the emergence of political wars, have occurred. However, the use of these new energy systems has led to the elimination of these crises between two or more countries and the normal implementation of previous trade relations, which is considered one of the factors affecting the economic development of the country. [6]

Another issue that makes the use of renewable resources important is environmental pollution caused by population growth, rapid urbanization and the intense energy demand that comes with it. The negative effects of rapid urbanization, which is considered one of the main causes of global warming, can be prevented to some extent by the use of renewable resources. [12]

Solar energy, an alternative energy source, is used in many countries around the world. The use of solar energy falling on the roofs and walls of houses significantly reduces the annual energy demand of the residents of these houses. At the same time, the use of solar and thermal energy is clean, simple, and all its forms are obtained by natural methods. With the help of solar collectors, residential and commercial buildings can be heated and provided with hot water. Solar energy collected with parabolic mirrors is used to produce heat. It is also possible to provide electricity to production. In addition, there is another method of energy production from the Sun - photovoltaic technology. Photovoltaics are devices that convert solar radiation directly into electric current. Solar radiation can be converted into useful energy using active and passive solar systems. Active solar systems include solar collectors and photovoltaics. Passive systems are obtained by designing buildings and selecting construction materials to maximize the use of solar energy.

During the process, solar energy is converted into useful energy and is replaced by other forms of energy, such as biomass, wind or water energy, which “controls” the weather on Earth. Most of the solar radiation is absorbed by the oceans and seas, as a result of which their water heats up, evaporates and falls to Earth in the form of rain, “feeding” hydroelectric power plants.

One of the alternative energy sources is alternative fuel for transport. Renewable energy sources are, first of all, fuels obtained from biomass.

Along with all that has been said, it is necessary to note the positive and negative sides of renewable energy sources. The positive sides of these energy sources are that all their types can be widely distributed everywhere and are environmentally friendly. Their operating costs are practically non-existent, since such energy sources are practically free.

The negative sides of renewable energy sources are that they cover a wider area in their use and most of their types are variable over time. The first negative side forces energy installations to be located on a large area. This leads

to the fact that such installations require a large volume and, as a result, a large investment. It is true that the high investment is later justified by low operating costs, but at the initial stage it has a significant impact on the pockets of those who use it.

More unpleasant situations are associated with the variability of such energy sources over time. Suppose, if the change in tidal energy is strictly cyclical, then the process of solar energy penetration, although generally subject to regularity, is also to some extent dependent on weather conditions. Wind energy is more variable.

As for geothermal installations, they guarantee constant energy production. [7]

It has become clear how excessive resource consumption and environmental pollution threaten life and that environmental problems can no longer be ignored and their solution can no longer be postponed. [10]

In recent years, developed countries around the world have been building their policies towards ensuring more sustainable development. Considering the demand for energy and energy resources in the modern era, we can see how important sustainable energy policy is. Sustainable energy policy consists of two main directions. One of these is increasing the use of alternative and renewable energy sources, and the other is increasing energy saving and energy efficiency. The main goal of sustainable development, which is a model of economic development, is to ensure that existing resources are used for human needs while protecting the environment. Thus, when using these resources, not only the current situation but also the potential needs of future generations should be taken into account. If we consider the demand for energy and energy resources in the modern era, we can see how important a sustainable energy policy is. [14]

Renewable energy is especially important among primary energy sources in terms of minimizing environmental pollution and being healthy. Initiatives made for this type of energy sources are called green entrepreneurship. [3]

As a result of the increase in the world's population and the proliferation of global problems, the demand for the use of "green energy" is increasing. The production of "green energy" plays an important role in minimizing carbon

emissions that cause environmental damage, preventing environmental pollution, and ensuring energy security.

The application of new technologies for the production of "green energy" has been gaining popularity since the 1970s. The concept of "green energy" or "green economy" was put forward by the British economist Michael Jacobs in 1991. M. Jacobs explained in detail the essence of "green energy", especially its role in environmental protection, in his book "Green Economy: Environment, Sustainable Development and the Politics of the Future". His ideas were widely spread during and after the global financial and economic crisis of 2008-2013. Thus, the development of the “green economy”, as well as the use of “green energy” as its component, has become relevant as one of the means of reducing environmental risks and deficiencies.

The reasons why the idea of the importance of using “green energy” is increasingly taking an important place in environmental awareness in modern times are as follows:

- The use of “green energy” helps to reduce climate change and limit global warming.
- As a result of the development of the “green energy” industry, new jobs are created, which is one of the important factors for sustainable development.
- The use of “green energy” plays an important role in improving air quality.
- The transition to “green energy” stimulates the application of new approaches and technologies in this area.

The demand for energy consumption is increasing in the world, which requires the improvement and sustainability of the energy supply model. It is important to reduce the impact of carbon emissions in the energy supply chain and prevent factors that cause climate change. The volume of electricity generation from renewable energy sources is increasing in various countries around the world, and this process is predicted to accelerate further in the near future.

The demand for energy consumption is increasing worldwide, which requires the improvement and sustainability of the energy supply model. It is important to reduce the impact of carbon emissions in the energy supply chain

and prevent the factors that cause climate change. The volume of electricity production from renewable energy sources is increasing in different countries of the world, and this process is predicted to accelerate further in the near future.

According to expert forecasts, by 2030, electricity from renewable sources, or "green energy", will provide 65 percent of electricity production in the world. According to the calculations of the International Renewable Energy Agency, by 2050, 90 percent of electricity in the world can be obtained from renewable or "green energy" sources. Carbon dioxide emissions will be reduced by 70 percent globally by 2050, which will help prevent climate change. First of all, there will be a rapid increase in electricity production due to wind and solar energy. This is expected to happen mainly in the Caucasus, Central Asia, Eastern and Southeastern Europe.

According to the forecasts of the International Renewable Energy Agency, the transition to alternative energy sources will not only reduce carbon dioxide emissions but also give impetus to socio-economic development. In order to prevent global climate change, it is planned to reduce carbon dioxide emissions to a minimum level in the period after 2050. Hydrogen and synthetic fuels, direct electrification, biofuels will have a serious impact on innovative business models and structural changes in this area.

The use of "green energy" is also important for human health. According to the World Health Organization, more than 13 million deaths in the world are associated with air pollution every year. "Green energy" is environmentally as well as economically viable. The application of efficient technologies for the use of such energy sources is important for the realization of energy security through the diversification of energy supply.

The global energy problem requires the sustainable satisfaction of the growing demand for energy resources in the world. The concept called the "energy trilemma" put forward by the World Energy Council pays special attention to creating a balance between energy security, affordable energy supply and environmental stability. Global energy security includes the efficient organization of energy supply from national and foreign sources, the reliability of energy infrastructure and the adequate level of satisfaction of energy demand.

The use of "green energy" has a significant impact on solving issues related to energy prices, energy security and the climate crisis. According to the Energy Transition Prosperity Index of the International Renewable Energy Agency, the 1.5°C strategy significantly improves global welfare. This index shows that the effectiveness of roadmaps for the transition to renewable energy is closely linked to energy policy, where domestic and international regulatory decisions play a decisive role.

The "2030 Agenda for Sustainable Development", adopted at the UN summit in September 2015, set 17 key targets, one of which is "affordable and clean energy". To this end:

- ensuring universal access to affordable, reliable and modern energy supply;
- significantly increasing the volume of energy from renewable sources;
- doubling global energy efficiency;
- strengthening international cooperation in facilitating access to renewable energy technologies;
- expanding infrastructure for modern and sustainable energy supply, improving technologies in this area, etc.

The use of environmentally and economically viable energy resources is of great importance for further improving decent living standards. In particular, the use of "green energy" is important in terms of the application of low and zero carbon technologies for the decarbonization of the energy system.

Currently, the cheapest type of electricity in most regions of the world is electricity based on renewable energy sources. In particular, significant attention is paid to the widespread use of "green hydrogen" by 2030. "Green hydrogen" is a clean form of hydrogen produced by utilizing renewable energy sources such as wind or solar energy through the electrolysis process. The use of "green hydrogen" is important for the realization of energy security as well as the prevention of carbon emissions that pollute the air. [16]

In recent years, countries around the world have made the transition to rapidly renewable alternative energy sources a priority. Considering the gradual depletion of traditional energy sources and the enormous amount of damage caused to the environment during their use, environmentally friendly alternative

(renewable) energy sources are widely used in developed countries of the world. [13]

The transition to a green economy is a source of widespread and rapid progress at the international level for the implementation of sustainable development strategies. The adaptation of production and jobs to a green economy, as well as the characteristics of green energy, along with many advantages, create even more competitive conditions between countries. The increase in negative impacts on the environment, even reaching a critical level, reveals the need to implement a green transformation. It is imperative to make appropriate changes in every industry. In order to achieve the goals set within the framework of the Paris Agreement, states need to re-approach production and consumption processes. Although the green economy has a role in increasing employment and solving other socio-economic issues, it is not enough to completely eliminate social injustice. The existence of various difficulties in the process of transition to a green economy between high-income countries and low-income countries is also a serious concern. In some cases, there is no confidence that this economic model will help reduce income differences. Although countries with a high level of prosperity are more advanced in the production of ecological products and services, ensuring competition in this area is difficult in low-income countries. In addition to state policy, factors such as societal adaptation, the suitability of the technologies used for this transformation, and human capital also play a major role in the successful implementation of a green economy.

CONSLUSION

Today, all countries around the world are concerned with energy security issues and global warming and increasing the usage of renewable energy offers one way to address both of these problems. [11]

It should be noted that using alternative and renewable energy is the easiest and most effective way to improve energy efficiency, energy productivity, combat climate change, clean air quality, and reduce energy costs.

The increase in energy production volumes will increase as expenditures on renewable energy decrease. Because the reduction in expenses for alternative energy will allow them to remain more competitive. These are the

three main factors for reducing costs: technological development, an increasingly competitive environment and the presence of active and experienced project creators with an international level.

Countries around the world are making major investments. These measures are aimed at reducing greenhouse gases in the atmosphere. It is clear that countries play a key role in green development worldwide. Governments, using economic and other policy instruments, are creating conditions that stimulate green production and consumption, promoting cooperation and supporting the sharing of good practices. As governments stimulate the development of new technologies, they will contribute more to green development.

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CHAPTER 3
ENERGY SECURITY AS A RESEARCH AREA OF INTERNATIONAL SECURITY

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MAPPING ENERGY: FROM RESOURCES TO GEOPOLITICAL STRATEGY

INTRODUCTION

Energy is a crucial part of human life and one of the critical elements of any human activity. It is required for heating, mobility, lighting and communication and is, therefore, integral to modern society. At the same time, energy, like most of society's resources, is scarce, meaning that society has limited available energy. Beyond its utilitarian value, energy functions as a foundational mechanism in the pursuit of power and the orchestration of wealth accumulation (Al & Kaplan, 2025, p. 7). As such, the availability, control, and distribution of energy resources are not merely technical or economic matters but have deep political and strategic implications. Although physical energy is usually not in short supply, the useful energy that people can use in the form of energy services is (Jansen & Van der Welle 2010). Because useful energy is a scarce resource, people had to learn how to prevent that scarcity and mitigate its consequences in their lives. Thus, the pursuit of energy security exists as long as people use energy (Valentine 2010).

Even though energy services are integral to all aspects of human life, energy security only became a public policy concern at the beginning of the 20th century when the issue of energy security attracted the attention of national defence policymakers.

The time the issue of energy security entered the public policy agenda was not coincidental. The beginning of the 20th century witnessed revolutionary transformations of energy systems and, specifically, the emergence of mechanised warfare, and high costs and benefits became associated with these transformations. For instance, the decision to convert the British Navy from coal to oil brought not only advantages in speed and flexibility but also risks related to the stability of oil supply from abroad. During World War II, the role of energy resources, especially oil, in military capabilities became evident – some strategic objectives during the war were determined by the intention to secure energy supply or prevent adversaries from doing so. For example, concerns about oil security were important for Japan's decision to occupy the East Indies and attack US troops in Pearl Harbour, and for Germany to drive toward the oil-rich Caspian region (Hayward 1995; Yergin 1991).

Even though national security has had to deal with a broad range of security threats – military, economic, social and environmental – from the

moment of its birth after World War II, security studies have been focused mainly on the military dimension of security. It is not surprising because security studies grew out of debates over protecting the state against external threats after World War II. At that time, the military dimension of national security dominated other dimensions of security, such as the economy or social issues, because the threats of external aggression were viewed as more possible and severe than economic crises or social problems. Consequently, during the Cold War, security studies was composed predominately of research focused on military statecraft (Baldwin 1997; Hampson 2013; Wolfers 1952). Even though other threats, including domestic ones, such as the economy, environment, health, poverty and inequality, were acknowledged, they were discussed chiefly regarding their impact on military security.

Yet the energy crises of the 1970s that resulted in crude oil scarcity and panic in the Western world brought the question of energy security into the security studies discourse. As Robert J. Lieber (1976) stated, 'energy became a security issue when the supply of oil and later the ability to pay for this oil become a matter of national survival'. Moreover, the crisis particularly challenged the military focus of security studies. As Joseph Nye (1980) so aptly put it, 'the probability of Soviet tanks rolling across the north German plain is much lower than the likelihood of an interruption of oil supplies stemming from various conflicts in the Middle East. Yet the United States is less prepared for an energy emergency than for a military attack'.

Even though the impact of access to natural resources on how and to what degree states interact with other states had been acknowledged before, the 1970s oil crises highlighted the direct relationships between energy, security and foreign policy. Control over flow, prices and energy infrastructure has become a central element of power dynamics in international politics (Colgan 2014). As a result, energy security has become an inevitable part of international politics and, therefore, of foreign policy.

Historically, international security studies was primarily concerned with security in a bipolar world – the security of other countries was mainly addressed only in the sense of how it could affect the security of superpowers (Buzan & Hansen 2009). Consequently, energy security debates during the Cold War covered almost exclusively the energy security of the United States.

The energy security of other countries was mainly discussed as part of the global rivalry between the superpowers. Even the US closest allies, such as Western Europe and Japan, were chiefly concerned about how pursuing their energy security might affect their relationships with the United States and its national security (Nye 1980).

Energy security as a concept has always had clear relationships with national security – semantically, historically and practically – and can legitimately be viewed as a particular instance of national security. Nonetheless, the exact place of energy security in the security studies scholarship is unclear. Energy security as an element of security studies scholarship depends on several groups of issues and several sets of public policy responses to the issues (Deese 1979). Almost a half century after the 1973 oil crisis, a particular transformation of the views on energy security might be expected to happen in security studies. Yet, no systematic analysis of these issues and policy responses has been conducted.

Considering the historical ties between energy and national security, this study aims to identify the current debates on energy security and related energy issues in the security studies scholarship. The study aims to answer the following research question*: How does contemporary security studies include energy issues in its scholarship?*

A concept of security is a highly ambiguous concept if used without specification: security for whom, from what threats, for which values and by what means (Baldwin 1997; Wolfers 1952)? The importance of making such clarification specifically about energy security was also emphasised by Cherp and Jewel (2011). Therefore, this study also attempts to identify how security studies scholars conceptualise energy security and, more specifically, how they answer the following questions: (1) Energy security for whom? (2) Energy security from what threats? (3) Energy security for which values? and (4) Energy security by what means?

Since the discussion about energy security issues is context dependent – energy security means different things to different people at different times and in different situations (Ang, Choong & Ng 2015) – the study is also interested in the authors' demographics – in other words, in addition to the question 'what

is said about energy in the security studies scholarship', the study aims to find an answer to the question 'who says?'

To answer these questions, the following exploratory study offers a quantitative and qualitative content analysis of academic articles on energy issues published in the top five international security studies journals from 2001 through 2020. Even though the sampling frame was limited to five journals and the sample to only 43 articles – the study's main limitation – the paper analyses *all* articles on energy issues published in these top five security studies journals over the last two decades. Thus, it can provide a wealth of information to answer Lasswell's (1948) classic question – who says what, to whom, why, how and with what effect – about energy in national security debates.

Last but not least, to understand the present and to influence future energy security, it is vital to understand how different security studies scholars thought about energy security. Because of the importance of the theoretical, historical background of energy security scholarship, a short unsystematic review of pre-2001 energy security articles in international relations journals was conducted. The purpose of that review was not to compare the articles published from 2001 to 2020 but to tentatively identify the major categories for content analysis. Yet certain conclusions can be made about the evolution of the scope and focus of debates on energy issues in security studies during the second part of the 20th century.

The article proceeds as follows. The next section briefly presents the historical coverage of energy issues and security in international relations and security studies literature before 2001. Section 3 describes the research design and methods used in this study. In section 4, the study turns to the results of content analysis and their discussion. The final section concludes and offers some directions for further research.

1. ENERGY SECURITY IN SECURITY STUDIES SCHOLARSHIP BEFORE 2001: A SHORT LITERATURE REVIEW

When energy security entered the security studies discourse in the 1970s, the question of conceptualisation, or specifying an exact meaning of energy security, was immediately aroused. Indeed, without a clear definition, it is not

possible to communicate about energy security issues and to conduct a much-needed policy analysis (Baldwin 1997). In 1979, David A. Deese (1979), defined energy security as 'a condition in which a nation perceives a high probability that it will have adequate energy supplies (including traditional sources such as firewood, and plant and animal residues that are frequently not traded in the marketplace) at affordable prices'. Later, Daniel Yergin (1988) defined the objective of energy security as: 'to assure adequate, reliable supplies of energy at reasonable prices and in ways that do not jeopardise major national values and objectives.'

Interruption of energy supply, unaffordable prices for energy or jeopardised values in its acquisition have been viewed as the primary threats to energy security (Yergin 1988). However, the specific nature of such interruptions, price surges and values they jeopardise has been a subject of debate in security studies literature.

The asymmetry of energy trade and market power of energy producers has been viewed as the primary source of price surges. Oil cartels play a crucial role in the energy security of energy-importing countries because of the so-called 'OPEC multiplier', a situation when even a slight increase in world energy demand results in a disproportionately large increase in demand for OPEC oil and its relative power (Lieber 1992; Mossavar-Rahmani 1983; Yergin 1988). Yet it was also acknowledged that the energy market imperfection is not the sole threat to energy security. Terrorism, technological accidents, wars and extortion can threaten the uninterrupted supply of energy at reasonable prices. Even though most of the concerns are about the uninterrupted supply of oil, the supply assurances problem exists for other types of energy sources as well – countries that operate nuclear reactors are also sensitive to the interruption of nuclear fuel supply from foreign countries (Rydell 1981).

An interruption of supply and high energy prices can affect national security in different areas and through different mechanisms. Competition for scarce energy resources can cause interstate and domestic armed conflicts. As a result, the question of how to secure energy supply without generating political, economic or environmental externalities that could lead to large-scale international conflicts has become central for security studies scholarship (Choucri, Ross & Meadows 1976; Copeland 1996; Deese 1979). Energy

resources can also be used as an instrument of national policy or, in other words, as a weapon (Paarlberg 1978). There were legitimate concerns that energy-rich nations may use energy resources to acquire influence abroad – to make other countries do something that they would not otherwise do, or prevent others from doing so, a classical Dahl (1957) definition of power.

Not surprisingly, national governments started to view foreign policy as a tool for meeting their energy needs. As Choucri, Ross & Meadows (1976) put it, 'Increasingly, foreign policy becomes an extension of resource politics'. At the same time, it has also been acknowledged that the attempts to increase energy security could limit foreign policy options because the states would be afraid that their foreign policy decisions unrelated to energy politics could interrupt energy supply and thus undermine national energy security. For instance, the oil crises of the 1970s and the fear that they could happen again have resulted in narrower US foreign policy choices toward the Middle East (Akins 1973; Riggs 1995). Besides, threats to energy security issues may bring new difficulties to the relationships among Western countries since they depend on different energy resources to a different degree. Therefore, even if the United States reduces its reliance on oil imports, it will remain vulnerable through interdependence with allies. Finally, increasing energy prices can cause slower economic growth, higher inflation rates and unemployment in energy-importing countries (Deese 1979; Nye 1980, 1982).

Being a policy-oriented discipline, security studies has been naturally interested in preventing threats to national security and mitigating their consequences. There are several clusters of public policy responses that can reduce the potential vulnerability of energy security systems – both international and domestic.

Military intervention against energy threats has been considered an entirely legitimate solution in security studies. Yet the political and economic costs of such a solution were viewed as being extremely high. Therefore, policy responses usually consider measures other than military. Nonetheless, the modest military presence in energy-rich regions such as the Persian Gulf area, alongside political measures, was viewed as a reasonable energy security instrument (Deese 1979; Lieber 1992; Nye 1980, 1982). More promising was the role of transnational cooperation, especially in the form of

intergovernmental organisations for energy security, such as the International Energy Agency (IEA) (Nye 1980, 1982; Yergin 1988).

Responses to threats to energy security are not limited to international responses. In the 1970s, there was a hope that by the end of the 20th century, crude oil would lose its predominance as fuel because of ground-breaking technologies (Akins 1973; Choucri, Ross & Meadows 1976). However, it was not expected that such a transformation would happen soon. Therefore, certain domestic energy policy responses included energy efficiency and conservation, including the use of tax policies to encourage more efficient use of petrol products; new technologies, such as dual-fired power plants to switch easily from reliance on oil to natural gas or coal; strategic petroleum reserves; and diversification of energy sources – first of all, shifting from oil to natural gas, nuclear energy, coal and renewables (Lieber 1992; Nye 1980; Yergin 1988). Nonetheless, these policies were viewed only as supplementary. The common view was that energy-importing countries could do domestically only a little to reduce their dependency on imported energy resources, at least in a 25-year term perspective. Therefore, the appropriate goal for energy security was not zero oil imports but rather a share of oil in the import that would allow surmounting possible supply interruptions (Akins 1973; Choucri, Ross & Meadows 1976; Deese 1979; Nye 1980, 1982; Yergin 1988).

1.1 Material and Methods

This study utilises a modified method used by Benjamin K. Sovacool (2014) to analyse research articles published in three major energy journals from 1999 to 2013. The modification for this study included a different sampling technique, new coding categories used in content analysis and different data analysis methods.

1.2 Sample

This study defined the population as the security studies academic literature published from 2001 through 2020. For this content analysis, articles were the unit of analysis, and the sample consisted of 43 full-length, peer-reviewed English language research articles representing the population. The

articles for the investigation were selected using a purposive two-step sampling technique.

In the beginning, journals were selected based on two criteria. First, international relations journals published in English were selected based on their explicit focus on international security studies according to their title and self-declared editorial aims and scope. Although many reputable international relations journals such as *International Organization*, *Foreign Policy*, *World Politics, Review of International Studies, International Studies Quarterly* and others regularly publish articles about international security, including energy security, for the purpose of the study they were excluded from the sampling frame.

Second, five journals were identified from the list of the security studies journals based on their academic reputation, which was operationalised as the 2019 Journal Impact Factor (JIF) by Clarivate. As a result, the following five journals were selected: *International Security* (JIF = 5.432), *Security Dialogue* (JIF = 2.419), *Security Studies* (JIF = 2.167), *Contemporary Security Policy* (JIF=1.880) and *Survival* (JIF=1.241). Articles published in these journals from 2001 to 2020 were considered a sampling frame.

The articles were viewed in electronic format and manually analysed by a single coder without the help of automated tools. The full-length, peer-reviewed articles with a primary focus on any energy issues were selected for further analysis. Commentaries, book reviews, notes, opinions, editorials, letters, viewpoints, corrigendum and similar items were excluded, although special issues and forum exchanges were included. As a result, 43 articles were selected from the five journals for final content analysis (see Table 1).

Table 1. Sample articles by journal and year of publication

Year	Total articles	*International Security*	*Security Dialogue*	*Security Studies*	*Contemporary Security Policy*	*Survival*
2001	**2**	0	0	0	0	2
2002	**2**	0	0	0	0	2
2003	**0**	0	0	0	0	0
2004	**2**	0	0	0	1	1
2005	**1**	0	0	0	0	1

Year	Total articles	*International Security*	*Security Dialogue*	*Security Studies*	*Contemporary Security Policy*	*Survival*
2006	**2**	0	0	0	0	2
2007	**3**	0	1	0	0	1
2008	**5**	0	0	0	1	4
2009	**2**	0	0	0	0	2
2010	**3**	0	1	1	0	1
2011	**1**	0	0	0	0	1
2012	**2**	0	0	0	1	1
2013	**7**	2	1	2	0	2
2014	**2**	0	1	0	0	1
2015	**2**	1	0	0	1	0
2016	**4**	0	0	3	0	1
2017	**1**	0	0	1	0	0
2018	**1**	1	0	0	0	0
2019	**2**	0	0	1	0	1
2020	**0**	0	0	0	0	0
Total	**43**	**4**	**4**	**8**	**4**	**23**

1.3 Data Collection

Qualitative and quantitative document content analysis was used as a primary data collection method. The content of all selected articles was viewed in electronic format and analysed by a single coder manually without the help of automated tools. The coding consisted of two major parts – author demographics and article content.

For the author demographic, the following variables were analysed for each article. The number of authors listed in an article was counted for the number of authors. For *institutional affiliation*, we recorded the institution each author provided as their affiliation. If someone listed several institutions, only the first affiliation was recorded. For the *country affiliation* variable, we recorded a country where the institution affiliated with each author was located. For *disciplinary affiliation*, a primary discipline for each author was identified

usually based on the author's primary department and/or position.

In terms of article content, we looked at the following variables:

1. We attempted to identify a *type of energy* the article was chiefly focused on for each article. We used five attributes of primary energy: coal, oil, natural gas, nuclear energy and renewables.
2. For *conceptualisation of energy security,* we attempted to identify what concept of energy security the authors explicitly used in their article, whether their own or borrowed from other sources.
3. Four variables were used to catch major *themes* of energy security covered in the analysed articles:

a. *Energy security for whom?* For this variable, we attempted to identify from whose perspective energy issues were discussed in an article. Specifically, it identified the unit of analysis – a particular case or entity, such as individual, organisation, state or world system, about which data was collected and a geographical focus of the article.
b. *Energy security from what threats?* For this variable, the major sources of threats to energy services or causes of energy crises were identified.
c. *Energy security for which values?* We analysed the aspects of society that are specifically affected by threats to energy security were discussed.
d. *Energy security by what means?* The actions that the authors offered to prevent threats to energy security or/and mitigate their consequences were analysed.

2. RESULTS AND DISCUSSION

2.1 Articles Distribution and Authors Demographics

We found no clear trend in the number of articles on energy issues published in the selected journals throughout the two decades. On average, the number of articles remained the same – low. There were years with no articles on energy security for most of the journals (Table 1). Among the journals, only *Survival* demonstrated relatively stable coverage of energy issues. However, we did not calculate the total number of articles for each year in each journal and could not assess the population, sample ratio and the share of the articles on energy compared to other security issues.

In terms of the number of authors, in 43 papers analysed, 63 authors were identified in total. Articles with one or two authors prevail, with a clear dominance of solo-authored papers (Figure 1) typical for the international relations field.

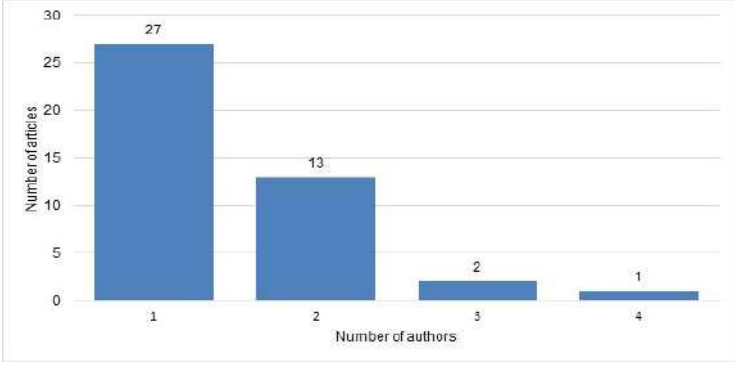

Figure 1. Number of authors per article

When it comes to authors' institutional affiliation, universities and think tanks were authors' primary places of employment (Figure 2).

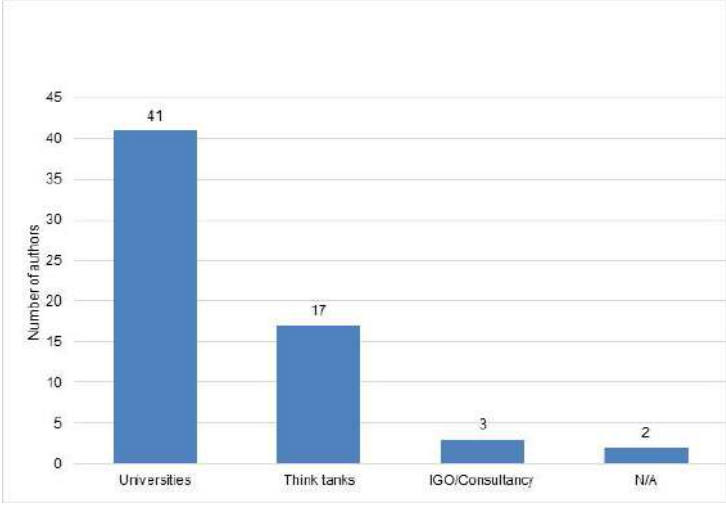

Figure 2. Institutional affiliation of the authors

Even though the authors' institutions are located in nine countries, two-thirds of the authors work for US-based organisations (Figure 3).

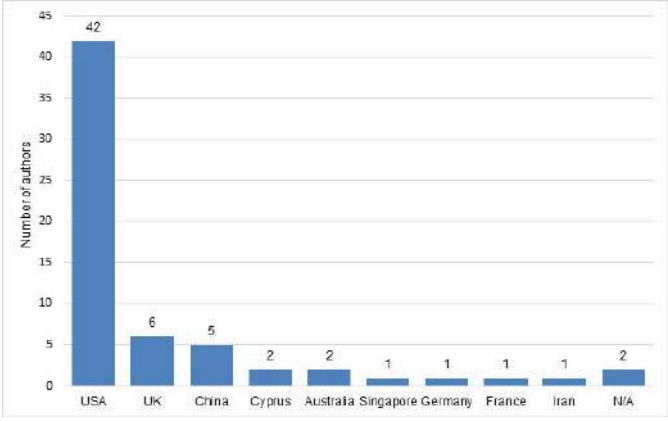

Figure 3. Country affiliation of the authors

In terms of the authors' disciplinary affiliations, political science, including its subdisciplines such as international relations, comparative politics, public policy and security studies, clearly dominated.

2.2 Types of Energy

Even though the articles mentioned almost every type of energy resource, they explicitly focused on only three of them – crude oil, natural gas and nuclear power, with an apparent prevalence of oil among them (Figure 4). Moreover, 15 articles explicitly had the word 'oil' in their titles – 'A third Oil Crisis?', 'Beijing's Oil Diplomacy', 'The Persian Gulf and the Geopolitics of Oil', 'Dismantling the Oil Wars Myth' are just a few examples. Analogously, six articles had the word 'nuclear' in their titles: 'Making the World Safe for Nuclear Energy', 'After Fukushima: China's Nuclear Safety' and others. Seven articles either covered all types of energy without giving priority or discussed general issues of energy security that could be applied to any type of energy.

Several articles were concerned with natural gas, and specifically about the stability of its supply and prices from Russia that was addressed in their titles – 'Russia, Energy and the West', 'When Interdependence Produces

Conflict: EU–Russia Energy Relations as a Security Dilemma', 'Nord Stream II and Europe's Strategic Autonomy'.

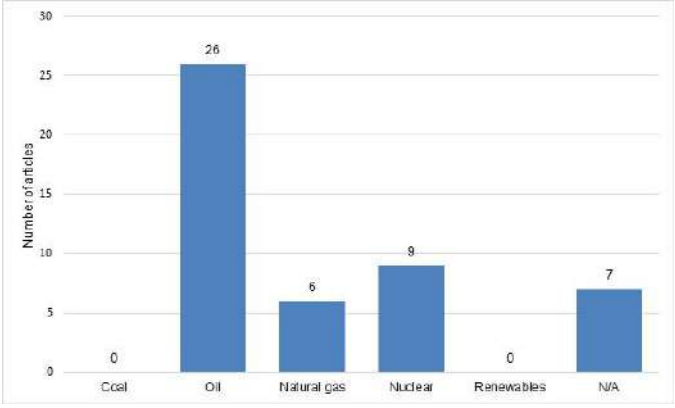

Figure 4. Number of articles with a focus on a specific type of energy

3. CONCEPTUALISATION OF ENERGY SECURITY

Even though 32 articles out of 43 use the term 'energy security' in the main text at least once, only ten explicitly conceptualised the term, either in their own or someone else's words (Table 2). It would be correct to say that a majority of them shared the traditional, two-dimensional availability/affordability view on energy security introduced by Deese (1979) and Yergin (1988) and currently supported by the IEA (2020). Yet some authors conceptualise energy security more broadly and consider other dimensions: for instance, the environmental one (Colgan 2013; Kennedy 2010; Peoples 2014).

An article by Ciută (2010) is quite distinct from other papers for its explicit focus on energy security. It offers a comprehensive review of the conceptualisation of energy security in academic literature. It provides a well-reasoned critique of any attempt to come up with a one-size-fits-all definition of energy security. The main argument is quite persuasive – since different actors include different political, economic or environmental considerations into energy security and in different degrees, and, most importantly, use different policy instruments to respond to threats, energy security would inevitably mean different things to the actors. Thus, even though energy is crucial for all sectors of human activity for all actors – or in Ciută's own words,

'energy security means the security of everything' – energy security makes sense only within a context.

Table 2. Energy security definitions

Energy security definition	Article	Source
The level of risk attached to any energy source, foreign or indigenous	(Buchan 2002)	Own
Supply issues, price issues, and systems issues	(Chow& Elkind 2005)	Own
Energy security means the security of everything: resources, production plants, transportation networks, distribution outlets and even consumption patterns; everywhere: oilfields, pipelines, power plants, gas stations, homes; against everything: resource depletion, global warming, terrorism, them' and ourselves.	(Ciută 2010)	Own
A condition in which a nation perceives a high probability that it will have adequate energy supplies at affordable prices	(Duffield 2012)	(Deese 1979)
The objective of energy security is to assure adequate, reliable supplies of energy at reasonable prices and in ways that do not jeopardise major national values and objectives		(Yergin1988)
The ability of states to maintain an uninterrupted supply of energy relative to demand at affordable and relatively stable prices without sudden and significant price increases	(Christou & Adamides 2013)	Adapted from (International Energy Agency 2020; Winzer 2012)
The reliable and affordable supply of energy	(Glaser2013)	(Deutch,Schlesinger & Victor 2006)
Assured continuity of energy supply, or a situation in which energy products are readily available through the usual commercial outlets and processes	(Noël 2014)	Own
The supply of crude oil or crude products on a state	(Hughes & Long 2015)	Own
The uninterrupted availability of energy sources at an affordable price	(Lind & Press 2018)	(International Energy Agency 2020)

Main Thesmes

In this section, we describe the main themes about energy issues we identified in the 43 articles. As explained in Section 2, we divided the themes into four large categories based on which questions they were answering – 'Energy security for whom?', 'Energy security from what threats?', 'Energy security for which values?' and 'Energy security by what means'?

CONCLUSIONS

The five leading security studies journals analysed in this study cover energy issues in security studies over the past twenty years. Although many reputable journals with a broad international relations focus, such as *International Organization, International Studies Quarterly* and *European Journal of International Relations,* were not included in the sample, we believe that the study still offers a significant amount of information on energy issues in security studies over the past twenty years.

Security studies do include various energy issues in their scholarship. Yet it must be admitted that the coverage of energy issues in security studies journals has been relatively low and sporadic. Most authors used approaches and methodological tools typical for security studies – typically neorealist qualitative, secondary-sources studies.

Energy issues are discussed in security studies specifically from a state-centric perspective only. Even though there has been an increased interest in human security in the last two decades, the analysed articles do not address energy security from a human security perspective.

Furthermore, the debates remain predominantly Western- and, first of all, US-centric. Even though the number of articles on energy security in other countries, including China, is noticeable, the accusation of security studies as 'being written largely by Westerners and for Western governments' (Hampson 2013) can be applied to energy security in security studies well.

Energy debated in security studies remains oil- and nuclear-centric. Even though some articles address the diverse nature of energy threats to energy security for different countries, the US-centric focus of the debates about energy security still keeps the half-a-century-old concerns over high oil prices or/and a heightened risk of oil supply disruptions from the Middle East and risk

associated with nuclear proliferation. It is hard to deny that oil remains the lifeblood of modern transportation and warfare. One might argue maybe there is a good reason why the research on energy security has focused consistently on the same topics – because the real world reflects that consistency. Yet it should be admitted that natural gas, specifically the ongoing EU-Russia gas crisis since the mid-2000s, despite its rich empirical ground for scholarly debate, has been reflected superficially in analysed mainstream security studies journals.

Even though energy security is not viewed only through the prism of military security, the military discourse, especially about the role of energy in provoking interstate and domestic armed conflicts, prevails as it did 40–50 years ago. The environmental dimension of energy security, such as pollution and global climate change, with a few exceptions remain neglected in academic security studies literature.

Quite similarly, the potential governmental responses to energy security threats have not changed much. They include diversification of suppliers and energy sources, domestic energy efficiency and stockpiles, and an active foreign policy, focusing on bilateral agreements rather than intergovernmental organisations.

There is a clear explanation for that – despite its historical importance, energy security has not been considered to the full extent to be part of security studies. Even though security studies is a dynamic field that has expanded its scope significantly in the past twenty years, energy issues remain a largely underexplored area within at least major mainstream security studies journals.

Yet it should also be admitted that the conclusion about the Western- and especially centric debates about energy in security studies is quite possibly an artifact of selection bias (i.e., the choice of which journals to study) rather than the whole field. For instance, several journals such as *Journal of Peace Research*, tend to focus on (1) quantitative data, (2) nonstate actors and (3) non-US perspectives. Therefore, the increasing number of international relations and security studies journals, both mainstream and those that consciously try to adopt less mainstream approaches to studying security, such as human security or geopolitics for content analysis, looks like a logical and promising direction for further research.

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CHAPTER 4
ENERGY AS POWER: THE GEOPOLITICAL STAKES IN THE EASTERN MEDITERRANEAN

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MAPPING ENERGY: FROM RESOURCES TO GEOPOLITICAL STRATEGY

INTRODUCTION

The discovery of significant offshore hydrocarbon reserves in the Eastern Mediterranean has dramatically altered the geopolitical landscape of the region. Over the past two decades, countries such as Israel, Egypt, and Cyprus have announced major gas finds, including Israel's Leviathan and Tamar fields, Egypt's Zohr field, and Cyprus's Aphrodite field. These discoveries have transformed the Eastern Mediterranean from a peripheral maritime zone into a vital arena of strategic competition and opportunity. Once considered energy importers, several countries in the region are now vying to become regional energy exporters, enhancing their geopolitical leverage.

The offshore gas fields lie beneath disputed waters, where overlapping claims to Exclusive Economic Zones (EEZs) have created tensions and fueled longstanding rivalries. The region's complex political landscape, including the unresolved Cyprus dispute, deteriorating relations between Greece and Turkey, and evolving Arab-Israeli ties, has made the question of energy exploitation a deeply political issue. This context highlights that natural resources in the Eastern Mediterranean are not merely economic assets, but also potent instruments of national power and international diplomacy.

Furthermore, global trends such as the European Union's shift toward energy diversification and the geopolitical ramifications of the Ukraine crisis have increased the strategic value of Eastern Mediterranean gas as an alternative to Russian supplies. In this light, energy has become a central axis around which the new regional order is being negotiated, reconfigured, and sometimes contested.

While energy cooperation has historically served as a platform for economic interdependence and peace-building, in the Eastern Mediterranean, it appears to be catalyzing fragmentation and rivalry. The convergence of natural resource ambitions, overlapping maritime claims, and militarized posturing among key actors has converted energy into a new domain of geopolitical contestation. The Eastern Mediterranean presents a unique case where energy discoveries have sharpened fault lines rather than bridged them.

The primary research problem, therefore, revolves around understanding how energy resources have intensified geopolitical rivalries rather than fostering cooperation. This chapter examines the paradox of energy diplomacy

in the region, where resource abundance, rather than fostering shared prosperity, has reignited historical grievances, reshaped foreign policy alignments, and drawn the strategic interests of global powers.

This problem is situated within broader theoretical debates in international relations and geopolitics regarding resource securitization, strategic alliances, and the interplay between energy infrastructure and territorial sovereignty. The chapter seeks to contribute to this discourse by highlighting the Eastern Mediterranean as a contemporary case study of energy-fueled geopolitical competition.

1. KEY RESEARCH QUESTIONS AND OBJECTIVES

The following core research questions guide this chapter:

1. How has the discovery of offshore energy resources in the Eastern Mediterranean affected regional geopolitical dynamics?
2. In what ways have EEZ disputes and maritime boundary disagreements been shaped or intensified by energy interests?
3. What roles do regional and extra-regional powers play in influencing the geopolitics of Eastern Mediterranean energy?
4. Can the region's energy resources act as a platform for multilateral cooperation, or will they remain a catalyst for conflict?

The primary objectives of the chapter are:

1. To map the strategic interests and alignments of key regional actors such as Turkey, Greece, Cyprus, Israel, and Egypt.
2. To examine the geopolitical implications of contested EEZs and infrastructural projects like the East-Med pipeline.
3. To analyze the influence of international actors such as the European Union, the United States, and Russia in shaping energy diplomacy in the region.
4. To assess the potential for energy to evolve from a source of friction into a foundation for regional cooperation.

1.1 Methodology

The methodology adopted for this chapter is qualitative and analytical, grounded in a desk-based research approach. Data and insights are drawn from

secondary sources, including academic literature, government documents, policy briefs, energy reports, legal texts (such as the United Nations Convention on the Law of the Sea, or UNCLOS), and media analysis. The chapter does not rely on fieldwork or primary interviews but emphasizes interpretive analysis and synthesis of existing data.

This research employs the framework of geopolitical analysis, focusing on the spatial and power dynamics that influence international relations in the Eastern Mediterranean. The geopolitical lens allows for a multi-scalar assessment, ranging from bilateral maritime disputes to global energy security considerations, by linking territory, resources, and state behaviour.

In addition, theories of resource geopolitics and energy securitization are used to interpret how states perceive and project energy as a strategic asset. These theoretical perspectives guide the understanding of why energy, rather than uniting regional actors, has become a contested field of power projection.

2. HISTORICAL AND GEOSTRATEGIC BACKGROUND

2.1 Brief History of Regional Energy Politics

The Eastern Mediterranean's energy politics have undergone significant evolution since the late 1990s, transforming the region from a peripheral player to a burgeoning frontier of hydrocarbon interest. In 1999 and early 2000, Israel initiated offshore exploration in its Mediterranean waters. By 2003, Egypt's Zohr field was identified, followed by major finds in Cyprus and Israel in the late 2000s (Stergiou, 2016). The discovery of Tamar (2009), Leviathan (2010), and Cyprus's Aphrodite field (2011) collectively revealed an estimated 40 trillion cubic feet of gas in the Levant Basin, reenergising global attention (Crospey, 2015).

These strategic discoveries galvanized regional and global energy agendas. Scholarly analysis highlights how such findings spurred a transition in regional energy politics, with coastal states transitioning from being energy import-dependent to emerging exporters (Tzimitras & Faustmann, 2016). This shift intensified geopolitical dynamics, fostering new energy alliances (e.g., the "Energy Triangle" among Cyprus, Israel, and Greece) and prompting infrastructural planning, such as the East-Med pipeline, which is backed by the

European Union to diversify energy supply routes and reduce reliance on Russian gas (Tsakiris, 2018).

However, the region's history also reflects hopeful economic developments being met with geopolitical backlash. Turkey, not a party to UNCLOS, has disputed maritime claims, asserting Turkish Cypriot rights and challenging Greek Cypriot Exclusive Economic Zone (EEZ) agreements (Stergiou, 2016). This clash between hydrocarbon optimism and maritime sovereign contention underscores the intricate melding of energy ambitions with national security priorities.

The literature reinforces this transformation as a challenge of economic opportunity entangled with geopolitical complexity. Tzimitras & Faustmann (2016) assert that Eastern Mediterranean energy will not only reshape export patterns but also activate a new vector in longstanding regional power rivalries. Meanwhile, Scanavino & Gürel note that legal frameworks (UNCLOS, EEZ demarcation) now intersect with new fault lines between regional nationalism and global energy dynamics.

2.2 Importance of the Mediterranean Sea as a Geopolitical Corridor

Strategically situated, the Mediterranean Sea serves as a critical maritime corridor for commerce, military logistics, and energy transport. Geopolitically, it connects Europe, Asia, and Africa; historically, it has been a crossroads of civilizations and power projections. Contemporary maritime geopolitics at sea is not a passive setting; it is an actively contested space shaped by national interests. Within the Eastern Mediterranean basin, maritime geography affords coastal states strategic leverage, enabling offshore extraction, pipeline planning, and the deployment of undersea infrastructure. The planned East-Med pipeline exemplifies this: spanning Israel, Cyprus, Greece, and Italy, the route bypasses Turkey, opening European energy imports to Eastern Mediterranean reserves (Eriksson & Boonstra, 2025).

Furthermore, naval assets have become instruments of influence. Turkey’s frequent deployment of seismic research and naval vessels to challenge survey missions highlights the Mediterranean’s importance not only for resource extraction but also for asserting sovereignty. As Eriksson &

Boonstra's (2025) "Toward contested seas?" review explains, maritime spaces are sites of "geo-strategic friction and contestation," with powerful states actively projecting influence in oceanic zones (Eriksson & Boonstra, 2025).

Beyond its resources, the Mediterranean plays a crucial role in global trade, as critical chokepoints, such as the Suez Canal and the Strait of Gibraltar, link oil and gas shipments from the Persian Gulf to Europe. The Mediterranean's role as both an economic artery and a geostrategic terrain renders it central to major power competition, from NATO's naval strategy to the EU's energy diversification.

2.3 Historical Disputes Among Regional Actors

The Cyprus Issue

Cyprus epitomizes how unresolved national disputes can be rekindled by resource economics. The island's division since 1974 has complicated maritime claims, with the Republic of Cyprus proceeding to define its Exclusive Economic Zone (EEZ) in bilateral agreements with Egypt (2003), Lebanon (2007), and Israel (2010). These delimited zones include blocks (particularly 12 and 8) with substantial gas potential. Turkey, which does not recognize these EEZ agreements, argues that they impinge on the rights of Turkish Cypriots and that the Republic lacks the prerogative to negotiate unilaterally (Örmeci, 2015).

Tensions peaked during the 2018 Cyprus gas dispute, when Turkey contested a Cypriot-Egyptian EEZ deal and deployed naval vessels to block Eni's drilling operations in Block 3. Turkey's position, that Turkish Cypriots must be included, has been central to its legal challenge, effectively stalling hydrocarbon negotiation and signalling that energy is intensifying nuclear standoff-era rivalries rather than transcending them (Örmeci, 2015).

Greco–Turkish Rivalry

Greece and Turkey share multiple flashpoints, ranging from territorial waters and airspace to Cyprus and energy. The Aegean disputes have deepened amid offshore hydrocarbon interests in the Eastern Mediterranean. Greece supports Cyprus and Israel, while Turkey doubles down on contested maritime claims. Germany notes that Greece's vested interest in the East-Med pipeline reflects strategic opposition to Turkey's inclusion (Aydın, 2023).

Moreover, when Turkey and the UN-recognised TRNC signed a maritime pact with Libya in 2019, creating a corridor that overlaps with Greek EEZ claims, Ankara sent seismic vessels to survey the contested zones. Greece and Cyprus responded with international protests and naval shadowing. According to Eriksson & Boonstra's (2025), maritime corridors are now actively "contested geographies," where national claims intersect with naval posturing and international law simultaneously (Eriksson & Boonstra, 2025).

Additionally, diplomatic chess was evident during the 2010 Mavi Marmara crisis, when the Israeli forces' boarding of a Turkish flotilla in international waters damaged relations between Turkey and Israel, delaying potential pipeline cooperation and reinforcing a new tripartite axis: Greece–Cyprus–Israel (Nachmani, 2005).

In summary, these diplomatic ruptures underscore how historical rivalries are being reframed through the lens of energy geopolitics. These are not new disputes; hydrocarbon surges, pipeline planning, disputes over EEZ boundaries, and territorial assertions intensify them.

3. THE RESOURCE LANDSCAPE: ENERGY DISCOVERIES AND EEZS

3.1. Overview of Major Offshore Gas Fields

The discovery of large offshore gas fields in the Eastern Mediterranean has radically transformed the region's energy geopolitics. These fields have provided previously energy-dependent countries with the opportunity to become exporters, increased competition over maritime boundaries, and attracted interest from global actors.

1. ***Leviathan (Israel):*** The Leviathan field, discovered in 2010, marked a turning point in Israel's energy sector. With estimated reserves of 22 trillion cubic feet (tcf) of natural gas, Leviathan became one of the largest offshore discoveries globally. It began production in 2019 and supplies both domestic consumption and exports to Egypt and Jordan (EurekAlert, 2010). Leviathan has not only strengthened Israel's energy security but has also transformed its foreign policy, especially with neighboring countries like Egypt and Jordan that now rely on Israeli gas.

As some argue, the field has provided Israel with a strategic tool for regional cooperation and influence.

2. ***Tamar (Israel):*** Before Leviathan, the Tamar field was discovered in 2009. Although smaller, estimated at 10 billion cubic meters (BCM), Tamar catalyzed a surge in offshore exploration and demonstrated the economic feasibility of deepwater gas production in the Levant Basin. Tamar came online in 2013 and has been instrumental in ensuring a stable domestic supply (Hamed & Bressler, 2019).
3. ***Aphrodite (Cyprus):*** The Aphrodite gas field, located in Cyprus's Block 12, was discovered in 2011 and is estimated to contain 3.6 to 7 tcf of gas. Although commercial development has faced delays due to market and geopolitical factors, Aphrodite lends Cyprus geopolitical weight. It has also enhanced trilateral cooperation with Israel and Greece, which share interests in pipeline diplomacy and energy security (Tsakiris, 2017).
4. ***Zohr (Egypt):*** Egypt's Zohr field, discovered in 2015 by the Italian company ENI, contains approximately 30 tcf of gas, making it the largest ever find in the Mediterranean. Zohr has reversed Egypt's energy fortunes, turning it from an importer suffering energy shortages into an exporter with surplus LNG capacity. According to Oxford Analytica (2017), Zohr's production not only enhanced Egypt's energy self-sufficiency but also positioned it as a future energy hub for the region, especially through re-export facilities on its Mediterranean coast (Oxford Analytica, 2017).

The U.S. Geological Survey estimates the total gas reserves in the Levant Basin at over 122 tcf (EurekAlert, 2010). These massive reserves have spurred regional governments and energy companies to explore and develop, creating a nexus between energy, national sovereignty, and strategic alliances.

3.2. Legal Framework: UNCLOS and Maritime Delimitation

1. ***UNCLOS Provisions:*** The United Nations Convention on the Law of the Sea (UNCLOS, 1982) is the primary international legal framework governing maritime jurisdiction. Under Articles 57 and 76, UNCLOS allows coastal states to claim an Exclusive Economic Zone (EEZ) up to

200 nautical miles, granting them sovereign rights for exploration and use of marine resources. In enclosed or semi-enclosed seas such as the Mediterranean, UNCLOS mandates that boundaries be established through bilateral agreement to achieve equitable solutions (Articles 74–83) (Filis & Leal-Arcas, 2013). This legal principle acknowledges geographic complexities, such as the proximity of opposing coastlines and overlapping entitlements. As a result, legal interpretation often hinges on achieving "equity" rather than applying automatic equidistance, particularly in regions with numerous islands.

2. ***Equitable Delimitation in Semi-Enclosed Seas:*** In the Mediterranean, equitable delimitation is particularly complex due to its semi-enclosed nature. Multiple overlapping Exclusive Economic Zone (EEZ) claims exist within short distances, compelling states to resort to agreements that consider equidistance, proportionality, historical rights, and geographic configurations (Dubbelboer, 2020). As Leal-Arcas (2013) emphasizes, courts and tribunals interpreting UNCLOS often move beyond strict equidistance to embrace fairness-based solutions. This interpretive flexibility creates room for political contestation, as seen in the Eastern Mediterranean, where some states claim extensive rights based on small islands. In contrast, others (notably Turkey) argue against such entitlements.
3. ***Cyprus and Greek Island EEZ Claims:*** Cyprus and Greece assert that islands generate full EEZ rights under UNCLOS, a position endorsed by most EU countries. Accordingly, Cyprus signed EEZ agreements with Egypt (2003), Lebanon (2007), and Israel (2010) (Leal-Arcas, 2013). However, Turkey, which is not a party to UNCLOS, disputes these claims, arguing that islands like Cyprus and Crete should not receive full EEZs because they distort equitable boundaries (Kırval & Özkan, 2021). Although Israel is not a party to UNCLOS either, its delimitation agreement with Cyprus in 2010 reflects de facto recognition of the convention's norms. Egypt has also accepted these standards, thereby reinforcing the legitimacy of island-based Exclusive Economic Zone (EEZ) claims in regional practice.

3.3. Analysis of Contested Exclusive Economic Zones (EEZs)

1. ***Cyprus–Turkey Dispute:*** The Exclusive Economic Zone (EEZ) around Cyprus remains one of the most contentious in the region. Cyprus has made unilateral delimitation agreements based on UNCLOS, but Turkey refuses to recognize them. Ankara argues that any decision concerning Cyprus's maritime claims must include the Turkish Cypriots in the north, who are not internationally recognized (Kırval & Özkan, 2021). Turkey has sent seismic and naval vessels into Cypriot-claimed waters on multiple occasions, particularly targeting areas like Block 3 and Block 6, where ENI and Total are licensed to operate. In 2018, Turkey's navy obstructed ENI's operations, signaling Ankara's willingness to use hard power to assert its maritime claims (Dubbelboer, 2020). Turkey's position includes a demand for revenue sharing from hydrocarbons, reflecting both its sovereignty and economic interests. According to Dubbelboer (2020), Ankara argues that the exclusion of Turkish Cypriots from energy development is a violation of their co-sovereignty over the island.
2. ***Greece–Turkey Aegean Conflict:*** The dispute between Greece and Turkey extends to maritime zones in both the Aegean and Eastern Mediterranean. Greece claims that islands such as Crete and Kastellorizo generate full EEZs under UNCLOS, while Turkey argues this gives Greece disproportionate control over maritime space (Leal-Arcas, 2013). Turkey's 2019 maritime agreement with Libya's GNA drew a line across the Mediterranean that disregarded these Greek island claims, prompting strong condemnation from Greece, Cyprus, and the EU. In response, Greece concluded an EEZ agreement with Egypt in 2020 that counteracts the Turkey-Libya deal. These reciprocal arrangements reflect a race to formalize maritime boundaries in a region lacking multilateral consensus (Qafisheh, 2024).
3. ***Legal and Diplomatic Gridlock:*** While UNCLOS provides dispute resolution through the International Court of Justice (ICJ), the International Tribunal for the Law of the Sea (ITLOS), and arbitral tribunals (Article 287), Turkey's non-signatory status complicates

enforcement (Qafisheh, 2024). This legal gap allows for conflicting interpretations and bilateralism over binding multilateral mechanisms. Özkan (2022) describes this as a "legal mosaic," in which overlapping agreements, such as Greece–Egypt, Greece–Italy, and Cyprus–Israel—coexist with Turkey's challenges, leading to militarized zones rather than mutually recognized borders. Furthermore, Turkey advocates for the inclusion of the Turkish Cypriot entity in any hydrocarbon negotiations, a position rejected by the Republic of Cyprus and most international actors who recognize only the southern government (Kırval & Özkan, 2021).

Thus, this has demonstrated how energy discoveries have intersected with complex legal claims and longstanding disputes in the Eastern Mediterranean. The major gas fields, like Leviathan, Tamar, Aphrodite, and Zohr, have significantly enhanced national capabilities and impacted interstate relations. However, the overlapping and contested EEZ claims, compounded by divergent interpretations of UNCLOS, have created a volatile legal environment. Turkey's challenges to island-based Exclusive Economic Zones (EEZs) and its maritime pacts (e.g., with Libya) have fragmented the region into competing legal and political blocs. While bilateral agreements offer temporary clarity, a multilateral settlement remains absent. The next section of this chapter will examine how these legal and territorial frameworks influence pipeline projects, regional alliances, and energy security strategies among actors in the Eastern Mediterranean.

4. KEY REGIONAL ACTORS AND STRATEGIC INTERESTS

4.1. Turkey and Blue Homeland Doctrine

Turkiye's Blue Homeland (Mavi Vatan) doctrine, formulated by naval strategists like Rear Admiral Cihat Yaycı, asserts Turkish sovereignty over extensive maritime zones in the Eastern Mediterranean, Aegean, and Black Sea (Isachenko & Kaymak, 2024). This doctrine forms a cornerstone of Turkey's assertive maritime policy, advocating for naval protection of resource rights and expanded continental shelf claims that directly counter Greek and Cypriot positions.

Under this doctrine, Turkiye has taken active measures: deploying seismic research vessels and naval escorts in contested waters (around Kastellorizo, Crete, and Cyprus), formalizing its position through a 2019 maritime memorandum with Libya's GNA, and physically asserting claims via naval presence (Stergiou, 2024). These actions reflect both a strategic aim to secure access to gas reserves and a political motive to rally domestic nationalist sentiment (Isachenko & Kaymak, 2024). While NATO members, these moves have strained alliances and brought Turkey into repeated conflict with Greece and Cyprus. They have also complicated relationships with NATO and the EU, forcing Western actors to balance deterrence and diplomatic engagement (Anthony & Sahlin, 2020).

4.2. Greece and Cyprus: EU Leverage and Maritime Claims

Greece and Cyprus leverage EU membership and international law to assert maritime claims. Officially backed by UNCLOS, they maintain that islands like Crete and Cyprus generate full EEZs (Tsafos, 2020)

In 2020, Greece signed maritime delimitation treaties with Egypt and Italy, while Cyprus has agreements with Egypt, Lebanon, and Israel. These aimed to counter Turkey's Libya MoU and reinforce EEZ boundaries based on EU-affirmed norms (Reuters, 2025).

Within EU forums, Greece and Cyprus have secured strong geopolitical support. The Commission condemned Turkish "unilateral steps" and approved sanctions in 2020 (Grigoriadis, 2021). Greece's emerging maritime spatial plan also integrates its claims into EU regulations, reinforcing its legal standing. Cyprus, with EU backing, has advanced its infrastructure, such as the Great Sea Interconnector (Greece–Cyprus–Israel), despite Turkish maritime objections. In essence, Greece and Cyprus position themselves as guardians of EU maritime law, countering Turkey's assertiveness through legal avenues and EU-backed projects (AP, 2025).

4.3. Israel and Egypt: Gas Export and Regional Partnerships

Israel, anchored by Leviathan and Tamar, is developing an energy profile focused on exports and regional partnerships. Leviathan supplies Egypt via pipeline and supports emerging frameworks such as the East Mediterranean Gas Forum (EMGF), which Israel joined in 2020 to institutionalize cooperation. Israel's export strategy has included deals with Egypt and Jordan, as well as plans for European entry via LNG terminals. However, internal disputes have arisen: the Aphrodite–Yishai unitization issue remains unresolved, although it is currently under negotiation. Strategically, Israel supports the Greece–Cyprus axis and the EastMed pipeline, which are seen as routes to export gas to Europe, thereby bypassing Turkey (Giuli, 2021).

Egypt, revitalised by Zohr, has regained self-sufficiency and become a key regional hub. With LNG terminal capacities at Damietta and Idku, Egypt exports to Europe and receives Israeli gas for regasification and re-export. Tripartite summits involving Egypt, Greece, and Cyprus (since 2014) have solidified cooperation on energy, security, and maritime boundaries. Egypt's strategy includes diversifying export routes and deepening partnerships with Israel and Cyprus, providing tangible protections against Turkey-aligned projects such as the Turkey–GNA pipeline (Reuters, 2025).

4.4. National Security and Sovereignty Narratives

Across these actors, energy geopolitics are intertwined with narratives of national security and sovereignty.

Turkey frames its maritime assertiveness as a safeguard of national survival and sovereign rights under the Blue Homeland doctrine, portraying its council as the rightful protector against external encroachment (Isachenko & Kaymak, 2024).

Greece and Cyprus emphasize legal protection under UNCLOS and EU law, stressing sovereignty of island territories and maritime borders. Their investments in transnational infrastructure reflect this vision (AP, 2025)

Israel positions gas exports as tools of economic diplomacy and regional normalization, embedding energy cooperation in new strategic ties with neighbors (Giuli, 2021).

Egypt narrates its energy resurgence as a national resurgence, utilising resource wealth to reinforce domestic stability and regional influence, while pivoting away from past import dependency (Giuli, 2021).

Ultimately, each actor couples sovereignty claims with energetic narratives that legitimise national strategies, from military assertiveness and legal recourse to multilateral partnerships and export diplomacy.

5. PIPELINE DIPLOMACY AND INFRASTRUCTURAL RIVALRIES

The Eastern Mediterranean has become a battleground for pipeline diplomacy and infrastructural positioning, as regional states pursue competing visions of energy security, export access, and geopolitical influence. Infrastructure projects such as the East-Med pipeline, Turk Stream, and LNG terminals are more than economic ventures; they are geopolitical statements that embed strategic alignments and fuel interstate rivalry.

The East-Med pipeline project, jointly promoted by Greece, Cyprus, and Israel, is envisioned to transport natural gas from the Leviathan and Aphrodite fields to the European mainland. The proposed pipeline would run through Cyprus and Crete to the Greek mainland, linking to European interconnectors. With a planned capacity of 9 to 12 billion cubic meters per year and a length of approximately 1,900 kilometres, East-Med was classified by the European Commission as a Project of Common Interest (PCI), thereby receiving partial funding under the EU's Connecting Europe Facility (Ellinas, 2022). However, the United States withdrew its political support for the project in 2022, citing concerns over environmental and economic viability, although it remained supportive of regional energy interconnectivity through other means (Kanellou, 2024). Turkey has strongly opposed the East-Med pipeline, claiming it disregards Turkish and Turkish Cypriot maritime rights and excludes Ankara from the regional energy framework (Stergiou, 2019).

In contrast, Turk Stream, a bilateral project between Russia and Turkey, provides a different axis of energy diplomacy. Operational since 2020, Turk Stream carries Russian gas under the Black Sea to Turkey, from where it is distributed to Southeast Europe. With a capacity of 31.5 billion cubic meters annually, it is a vital part of Russia's strategy to bypass Ukraine and consolidate

influence in European energy markets, while simultaneously reinforcing Turkey's role as a regional energy hub. This infrastructure also illustrates Turkey's bid for geostrategic relevance, as it bridges the Eurasian and Mediterranean energy corridors (Dang, 2023).

Liquefied natural gas (LNG) has emerged as a flexible and politically safer alternative to pipeline exports. Egypt's LNG infrastructure, including the Idku and Damietta plants, positions it as a central node in regional gas re-export, utilizing both domestic production from the Zohr field and Israeli imports via pipeline (Stergiou, 2023). Israel and Cyprus have also explored liquefied natural gas (LNG) options, including floating LNG (FLNG) platforms and proposed terminals. LNG offers export agility without the geopolitical constraints of pipeline routes, especially where EEZ disputes make seabed infrastructure politically fraught. Scholars argue that LNG may be the more viable short- to mid-term solution, especially given the uncertain future of large pipeline investments in a decarbonizing global economy (Markopoulos, 2019).

Multinational energy corporations are essential actors in this complex infrastructure landscape. Italy's ENI played a pivotal role in the Zohr discovery and remains deeply involved in Cypriot and Egyptian upstream activities. In recent policy statements, ENI's CEO has emphasized the need for regional dialogue, suggesting even that Turkey's concerns around exclusion from the East-Med project must be considered in future planning (Markopoulos, 2019). Similarly, U.S.-based Noble Energy (now owned by Chevron) was instrumental in the development of Israel's Tamar and Leviathan fields. Chevron's acquisition in 2020 marked a shift toward greater U.S. corporate involvement in Eastern Mediterranean gas, particularly through exploration partnerships and potential LNG exports (Stergiou, 2023).

Other companies such as TotalEnergies, ExxonMobil, and Novatek have secured exploration licenses off Cyprus's coast, navigating the political sensitivities of disputed waters. These firms, though commercially driven, have a geopolitical impact; their presence affirms state claims and solidifies exclusive economic zones through physical activity and legal contracts. Their involvement in the Eastern Mediterranean Gas Forum (EMGF) further embeds private actors in state-led energy diplomacy, shaping norms, practices, and infrastructure decisions (Sukkarieh, 2022).

Infrastructure has thus become a strategic alignment tool. The East-Med pipeline initiative has deepened cooperation among Greece, Cyprus, and Israel, sometimes referred to as the "energy triangle." These countries conduct regular trilateral summits, not only to coordinate energy policy but also to align on regional security and diplomacy. Egypt has joined this group, participating in initiatives like the EMGF and trilateral energy agreements with Greece and Cyprus. These partnerships reinforce shared narratives of legality, cooperation, and energy-driven prosperity (Stergiou, 2019).

In contrast, Turkey's infrastructure strategy, including its proposal for an alternative Israel–Turkey pipeline and its agreement with Libya's GNA to demarcate overlapping maritime zones, highlights competing visions of regional order. Turkey's absence from the EMGF and opposition to East-Med-related projects are not only about energy flows but about influence, recognition, and maritime jurisdiction. LNG corridors also offer strategic alignments. Egypt's LNG re-export of Israeli gas creates a corridor less susceptible to maritime disputes, aligning Cairo and Tel Aviv with European energy diversification goals. Cyprus and Greece have supported similar LNG options through onshore and offshore projects. These corridors circumvent contested waters and offer a buffer against the geopolitical volatility of pipeline diplomacy (Stergiou, 2019).

In conclusion, pipeline and LNG infrastructure in the Eastern Mediterranean are not merely technical developments; they are deeply political tools that embed strategic narratives and alliances. The East-Med pipeline symbolizes EU integration and energy independence from Russia, but faces opposition and viability concerns. Turk Stream exemplifies Turkish-Russian cooperation and Eurasian influence. LNG, particularly through Egypt and Israel, offers a neutral alternative that bypasses territorial disputes. Multinational corporations shape, finance, and legitimize these paths, reinforcing the energy-security nexus. As infrastructure advances, so too does the regional alignment it supports, drawing some actors closer, while pushing others further apart.

6. EXTERNAL POWERS AND GLOBAL STAKES

6.1 Role of the European Union

The European Union views Eastern Mediterranean gas as a potential alternative to Russian imports, aiming to enhance its energy security and meet its climate goals. The 2014 EU Energy Security Strategy explicitly endorsed diversification of gas supplies via the region, aiming to reduce dependency on Russian pipeline gas (Grigoriadis, 2014). The 2022 Repower EU plan further accelerated this agenda by proposing new infrastructure, including the East-Med pipeline, to reduce Russian gas reliance by two-thirds by 2023 and transitioning toward renewables under the Green Deal framework. However, the Green Deal also mandates greenhouse gas reductions of at least 55% by 2030, limiting the long-term role of natural gas. As such, while East-Med aligns with short- to mid-term diversification goals, its alignment with the EU's climate commitments remains uncertain (Sandri, 2025).

6.2 U.S. Policy Shift under Different Administrations

U.S. policy toward Eastern Mediterranean energy has shifted markedly across presidential administrations. In 2019, Under Secretary of State Mike Pompeo, the U.S. supported the East-Med project as part of broader diversification efforts for Europe. However, in early 2022, the Biden administration withdrew its official backing due to concerns over cost, environmental impact, and alignment with European climate policy (Tzogopoulos, 2022). At the same time, elements of U.S. strategy favored strengthening security cooperation with Greece, aligned with a shift in U.S. maritime posture in the region, and reflected broader efforts to counter Russian influence (Yegin, 2022). This indicates a nuanced approach: U.S. support for Europe's diversification persists, albeit reconfigured through the lenses of security and renewables rather than fossil fuel-centric infrastructure.

6.3 Russia's Interest and Mediterranean Naval Presence

Since intervening in Syria in 2015, Russia has increased its regional naval and air presence to protect its military and energy interests (Adamsky, 2020). Through the permanent Mediterranean Squadron and access to Tartus naval base, Russia projects naval power and provides strategic deterrence,

including by deploying air defenses and cruise missile-capable ships (Pierini, 2021).

Moscow views the Eastern Mediterranean's energy development, such as the East-Med, as a challenge to its dominance of EU energy markets. Gazprom has acquired stakes in key energy firms (e.g., Rosneft in Zohr in 2017) and invested in southeastern Europe (Proedrou, 2023). Russia has used energy exports, military cooperation, and diaspora ties to project power: supporting Haftar in Libya, interfering in migration dynamics, and reinforcing Syria's Assad regime (Naval base expansions and cargo transfers to Libya). Strategically, Russia aims to undermine EU and NATO cohesion, using Eastern Mediterranean presence to exploit intra-alliance tensions, particularly between Greece and Turkey (Rumer & Sokolsky, 2021).

6.4 NATO's Internal Friction due to Intra-Alliance Disputes

NATO faces growing internal tension as Greek–Turkish disputes persist despite the broader alliance's unity. Both are NATO members, yet long-standing Aegean confrontations over maritime zones, airspace, and continental shelf remain unresolved (AP, 2025). NATO's policy has traditionally deferred intra-member dispute resolution to bilateral mechanisms, leaving such issues simmering at a lower intensity but without a structural resolution. Overlapping alliances in the Eastern Mediterranean further strain NATO's cohesion: France's naval deployment in support of Greece against Turkish maritime operations highlights political divisions. Analysts suggest that NATO must take a more proactive role in mediating disputes among its members to maintain its strategic credibility in the region (Lampas & Filis, 2023).

7. ENERGY COOPERATIVE VS. CONFLICT: A DOUBLE-EDGED SWORD

7.1 Analysis of Regional Forums

The Eastern Mediterranean Gas Forum (EMGF), founded in January 2019 and formalized in 2020, brings together Cyprus, Egypt, Greece, Israel, Italy, Jordan, Palestine, and France, with the EU, U.S., and World Bank as observers, to foster regional dialogue and coordination on gas exploration, infrastructure, and trade. While the EMGF encourages cooperation, its statute

reveals institutional weaknesses, as it lacks dispute-resolution mechanisms and binding commitments, which limit its capacity to resolve deep-rooted political tensions. Despite this, the EMGF has facilitated agreements, such as the 2022 Israel–Egypt gas export cooperation, that hint at its potential to gradually build a competitive and stable regional gas market (Magliveras & Naldi, 2023).

7.2 Bilateral Agreements vs. Multilateral Cooperation

In addition to the EMGF, bilateral deals on maritime borders and resource sharing have proliferated. Notably, Cyprus has signed maritime delimitation treaties with Egypt (2003), Lebanon (2007), and Israel (2010). In contrast, Greece's 2020 maritime deal with Egypt was widely seen as a counter to Turkey's agreement with Libya (Dubbelboer, 2020). These bilateral agreements provide legally binding clarity and often address specific issues, such as development rights and conflict avoidance. However, they simultaneously contribute to a fragmented landscape of overlapping claims, as the Turkey-Libya Memorandum of Understanding (MoU) in late 2019 created competing maritime zones claimed by Ankara and Tripoli. While multilateralism through the EMGF seeks inclusivity, its exclusion of Turkey, Lebanon, and Northern Cyprus weakens its capacity for conflict resolution (Planetary Security Initiative, 2023). Thus, although bilateral treaties provide legal clarity, they risk reinforcing division unless embedded within broader regional frameworks.

7.3 Risk of Military Escalation and Securitization of Energy

The contest over Eastern Mediterranean gas has become securitized, treated as an existential issue, leading to military deployments, naval escorts, and drilling plant harassment. For example, Turkey has sent warships to obstruct drilling efforts by companies like ENI in Cypriot blocks (2018) and to escort seismic vessels (Dimou, 2016). The region's rise in militarization reflects deeper energy-driven securitization dynamics, which scholars tie to national identity and territorial integrity, hallmarks of Copenhagen School theory on securitization (Magliveras & Naldi, 2023).

Recent events amplify these risks: instability in Gaza and militant threats from groups like Hezbollah and Hamas have resulted in temporary shutdowns

of Israeli gas stations and halted exports, demonstrating how energy infrastructure is vulnerable to broader conflict spillovers (Magliveras & Naldi, 2023). Analysts warn that such securitization not only militarizes pipelines and rigs but also reframes gas as a geopolitical chess piece, escalating the prospects of confrontation (Dimou, 2016).

The Eastern Mediterranean presents a complex tableau where energy simultaneously catalyzes both cooperation and conflict. The EMGF offers a valuable, though limited, platform for institutional engagement. Bilateral treaties lend legal precision but risk fragmentation without overarching integration. Meanwhile, the travel from geoeconomics to geopolitics, through the securitization of gas, elevates energy into the theater of military tension. Understanding these dual dynamics is vital to foresee whether energy becomes a bridge or a fault line in regional politics.

8. IMPLICATIONS FOR REGIONAL ORDER AND GLOBAL ENERGY POLITICS

8.1 How Energy Reshapes Alliances

The trilateral partnership among Israel, Greece, and Cyprus, often referred to as the "Energy Triangle", has evolved into a semi-formal security and energy alignment, primarily driven by shared gas interests and concerns over Turkey's assertiveness. Academic analysis frames it as a "comfortable quasi-alliance," reinforcing cooperation through energy infrastructure, naval exercises, and political coordination without committing to formal military pacts (Tziarras, 2016).

The alliance has extended beyond energy: in December 2024, Greece and Israel formalized a strategic energy agreement that includes electricity interconnection, renewable development, and pipeline cooperation, demonstrating how energy is catalyzing deeper regional integration (Bellos, 2024). The partnership strikes a balance with Turkey, with the alliance portrayed as flexible and pragmatic. A reversal of Turkey–Israel relations could reconfigure this dynamic, but as it stands, the Energy Triangle remains a potent geopolitical instrument (Tziarras, 2016).

8.2 Strategic Autonomy vs. Interdependence

States in the region are increasingly navigating a balance between pursuing strategic autonomy through independent energy and asserting interdependence through cooperation. Greece and Cyprus seek autonomy by securing Exclusive Economic Zone (EEZ) agreements and constructing new pipelines, while Egypt offers interdependence through LNG infrastructure and ENI-led cross-border networks. Multilateral entities like the East Mediterranean Gas Forum (EMGF) aim to institutionalize interdependence through a shared market. However, rivalries, particularly with non-members such as Turkey, limit its reach and credibility (Stergiou, 2019). Scholars caution that without clear conflict-resolution mechanisms, cooperation may remain fragile. Thus, the region currently balances between autonomy and integration, creating energy corridors that both connect and divide.

8.3 Future Outlook

Three divergent scenarios may shape the future:

1. **Cooperation**: If trilateral and multilateral mechanisms (e.g., EMGF, EastMed pipeline, EuroAsia/Great Sea interconnectors) successfully integrate energy and security policy, a cooperative regional order may emerge. Projects linking Israel, Cyprus, Egypt, and Greece show promise in fostering joint infrastructure and mutual dependence.
2. **Containment**: Alternatively, alliances may form to "contain" Turkey's ambitions. The U.S. has supported the Eastern Mediterranean Security and Energy Partnership Act, bolstering the 3+1 bloc of Israel, Cyprus, Greece, and the U.S. against perceived Turkish encirclement. Energy corridors could become strategic buffers, fueling both growth and division.
3. **Confrontation**: The risk remains that disputes over Exclusive Economic Zones (EEZs), project rights, and energy infrastructure, if left unresolved by multilateral governance, could spiral into military or hybrid conflict. Tensions surrounding Greek–Turkish disputes and Turkey's objections to EMGF projects, such as the EuroAsia interconnector, are illustrative. The securitization of energy resources increases the potential for forceful responses.

The likely trajectory is a hybrid outcome: intensified cooperation among some actors counterposed by strategic containment of others. Energy may thus reinforce fault lines as much as it fosters cohesion.
In sum, energy is both creating a new regional order and fragmenting it, supporting aligned blocs while exacerbating rivalries.

CONCLUSION

The Eastern Mediterranean has emerged as a pivotal theater where energy resources are not merely economic assets but geopolitical tools that influence regional and international power dynamics. This chapter traced the evolution of the region's energy landscape, from early hydrocarbon discoveries in Israel, Egypt, and Cyprus to the emergence of contentious Exclusive Economic Zones (EEZs), pipeline rivalries, and militarized maritime posturing. Key actors, including Turkey, Greece, Cyprus, Israel, and Egypt, were shown to engage in a complex matrix of competition and cooperation, with multilateral forums such as the Eastern Mediterranean Gas Forum (EMGF) offering limited but notable platforms for dialogue. Meanwhile, global powers including the European Union, the United States, and Russia have entrenched their stakes, shaping energy politics through infrastructure funding, naval presence, and diplomatic maneuvering.

Energy in the Eastern Mediterranean thus plays a dual role: it offers a rare opportunity for cross-border collaboration and economic interdependence, yet simultaneously functions as a flashpoint for regional antagonism and legal disputes. The securitization of energy, exemplified by naval deployments, EEZ confrontations, and exclusionary alliances, illustrates how energy has become woven into narratives of national sovereignty and identity. Nevertheless, shared interests in export stability, infrastructure development, and climate resilience offer pathways for energy to act as a bridge rather than a barrier. Whether these reserves become tools of reconciliation or leverage in strategic confrontation will depend on the willingness of regional actors to institutionalize trust and dialogue.

For policymakers and stakeholders, the implications are multi-scalar. At the regional level, reinforcing cooperative mechanisms, such as transparent revenue-sharing models and joint exploration agreements, can help defuse

tensions over disputed waters. At the international level, frameworks like the EMGF must be made more inclusive and equipped with conflict-resolution capabilities. The European Union should align its diversification strategies with climate commitments, ensuring that energy diplomacy complements the Green Deal. The United States, having recalibrated its involvement, could support confidence-building initiatives and inclusive diplomacy that bring in currently excluded actors such as Turkey. Meanwhile, NATO must address intra-alliance frictions that weaken its strategic cohesion in the region.

Future research should investigate how the Eastern Mediterranean energy nexus intersects with global climate transitions, including the impact of decarbonization pressures on the value and viability of fossil fuel infrastructure. Additionally, scholarly attention should be directed toward energy justice: how resource development impacts marginalized communities, women, and displaced populations in conflict zones like Gaza or Lebanon. Finally, a deeper inquiry into the role of transnational corporations and their influence on state behaviour could illuminate the blurred lines between commercial and strategic interests in shaping the region's future.

In sum, the Eastern Mediterranean stands at a crossroads. Energy diplomacy here can either deepen fragmentation or lay the groundwork for a new regional order based on interdependence and collective security. The outcome will depend not only on the alignment of pipelines and LNG terminals but also on the political will to construct inclusive, equitable, and forward-looking governance frameworks.

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CHAPTER 5
INDIA'S ENERGY MARKET RESPONSE TO GLOBAL SUPPLY CHAIN DISRUPTIONS POST-COVID AND UKRAINE WAR

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INTRODUCTION

In the contemporary globalized economy, energy plays a pivotal role in driving industrial output, transportation, infrastructure development, and overall economic growth. As nations expand their industrial capacities and transition toward urbanized societies, their dependence on reliable and affordable energy supplies becomes increasingly pronounced. India, as the world's third-largest energy consumer, finds itself at the intersection of these dynamics, heavily reliant on international energy markets to meet its burgeoning domestic demand for crude oil, liquefied natural gas (LNG), and coal.

Over the past five years, two unprecedented global events—the COVID-19 pandemic and the Russia-Ukraine war—have fundamentally disrupted global energy supply chains. These twin crises revealed vulnerabilities in the global energy trade system and exposed structural weaknesses in countries like India, which are net importers of fossil fuels. The COVID-19 pandemic, which struck in early 2020, led to widespread shutdowns of industrial activities, reduced transportation demand, and triggered one of the most dramatic collapses in crude oil prices in history. Major oil-producing nations were forced to reduce output, while logistical barriers, including port closures and shipping delays, further crippled the movement of vital energy resources across the world.

As the world was still grappling with the economic aftershocks of the pandemic, the eruption of the Russia-Ukraine conflict in February 2022 created a second layer of disruption. Western sanctions on Russia—a key global energy supplier—upended traditional crude oil, natural gas, and coal trade flows. Europe's sudden pivot away from Russian energy imports significantly tightened global energy markets, driving up prices and making competition for alternative supplies fiercer. The ripple effects of this geopolitical standoff were felt across the globe, including in India, where inflationary pressures on energy imports threatened economic stability.

India's high energy import dependency—over 80% for crude oil, around 50% for LNG, and nearly a quarter for coal—made it especially vulnerable to these supply chain shocks. Any disruption in global availability or spike in prices directly impacts India's energy security, industrial output, and fiscal

health. Moreover, the energy-intensive sectors of the Indian economy—such as power generation, manufacturing, and transportation—are critically reliant on consistent energy inflows to maintain productivity and competitiveness.

This chapter undertakes a comprehensive analysis of how India responded to these dual crises. It examines the strategic recalibrations in energy sourcing, such as India's increased purchases of discounted Russian crude, renegotiation of LNG import contracts, and diversification of coal suppliers. It also investigates the policy initiatives undertaken by the Indian government to build resilience—such as expanding Strategic Petroleum Reserves (SPR), reforming domestic energy exploration policies, and rationalizing fuel subsidies to withstand price shocks.

Further, this chapter highlights infrastructural strategies designed to mitigate logistical risks. These include the development of alternative trade corridors like the Chabahar Port in Iran and the International North-South Transport Corridor (INSTC), which are intended to reduce India's dependence on vulnerable maritime chokepoints such as the Strait of Hormuz and the Suez Canal. These initiatives not only serve as contingency routes during times of geopolitical stress but also enhance India's connectivity with energy-rich regions such as Central Asia and the Middle East.

Finally, recognizing that fossil fuel markets will remain volatile in the foreseeable future, India's long-term strategy also involves a significant shift toward renewable energy resources. The National Hydrogen Mission, rapid expansion of solar and wind capacities, and exploration of green ammonia exports underscore India's commitment to reducing its dependence on imported fossil fuels and achieving energy self-sufficiency.

In essence, this chapter aims to provide a critical evaluation of India's multifaceted energy strategy in the face of global supply chain disruptions. It seeks to assess the effectiveness of these measures not only in stabilizing short-term energy access but also in securing long-term energy independence. By exploring these dimensions, the chapter contributes valuable insights into the broader discourse on energy security, trade resilience, and geopolitical risk management in the 21st century.

1. INDIA'S ENERGY IMPORT DEPENDENCY: A BRIEF OVERVIEW

India's economic growth and industrialization have significantly driven its energy requirements over the past two decades. As the world's third-largest energy consumer, after China and the United States, India's energy consumption pattern is marked by a growing dependence on imported fossil fuels—particularly crude oil, natural gas, and coal. This dependence presents both an economic opportunity for growth and a strategic vulnerability in times of global supply chain disruptions.

1.1 Rising Energy Demand: The Context

India's economic trajectory has necessitated an exponential increase in energy consumption, particularly as it pushes forward with ambitious industrialization, urbanization, and infrastructure development programs under initiatives like 'Make in India' and 'Smart Cities Mission'. According to projections by the International Energy Agency (IEA, 2024), India's total energy demand is expected to surge by 35% by 2030, driven largely by:

- Expanding manufacturing sectors
- Growing urban populations
- Rising middle-class income levels
- Increasing per capita vehicle ownership

This rising demand is met predominantly through imports, since India's domestic energy production capacities—especially for oil and gas—remain limited despite policy efforts to boost exploration and production.

1.2 Crude Oil Dependency

Crude oil is the single largest component of India's energy imports. India imports around 84% of its total crude oil requirements, making it one of the most oil import-dependent major economies globally. The oil demand caters to:

- Transportation fuels (petrol, diesel, aviation turbine fuel)
- Industrial heating and feedstock for petrochemical industries
- Power generation (in some coastal regions)

The country's major crude oil import partners are Iraq, Saudi Arabia, and Russia. In recent years, the share of Russian oil has dramatically increased

following sanctions imposed on Russia by Western countries due to the Ukraine conflict, offering India access to discounted Russian crude.

1.3 Liquefied Natural Gas (LNG) Imports

India's domestic natural gas production is insufficient to meet the growing requirements of its industrial, household (city gas distribution), and fertilizer sectors. As a result, the country imports over 53% of its LNG needs, primarily from Qatar, the United States, and Australia.

LNG is crucial for:

- Gas-based thermal power generation
- City gas distribution networks (CNG for transport, PNG for households)
- Fertilizer production (ammonia-based fertilizers)
- Industrial applications (steel, glass, ceramics industries)

Spot market volatility in LNG prices post-2020 and the Russia-Ukraine conflict have made LNG imports costlier, forcing India to negotiate more long-term contracts to ensure price stability.

1.4 Coal Import Dependency

Despite being the world's second-largest coal producer, India continues to import coal due to quality requirements and supply-demand mismatches in certain industrial sectors. Around 23% of its total coal consumption is met through imports, particularly **coking coal** essential for steel production, which is not available in sufficient quantities or quality domestically.

The primary suppliers of coal to India include:

- Indonesia (thermal coal)
- Australia (high-quality coking coal)
- South Africa (thermal coal)

Coal continues to dominate India's electricity generation sector, contributing around **55%** of the country's total electricity output, thus making reliable coal imports essential for energy security.

1.5 Implications of Import Dependency

India's high dependency on energy imports has several implications:

- Economic Risks: Import bills are highly sensitive to global price fluctuations. A sharp rise in crude oil prices can widen India's current account deficit, weaken the rupee, and fuel domestic inflation.
- Geopolitical Risks: Any geopolitical event in key supply regions (Middle East, Russia, South East Asia) can disrupt energy flows, creating energy security challenges.
- Energy Security Concerns: The potential for supply chain disruptions (as seen during COVID-19 and the Russia-Ukraine war) increases the risk of energy shortages and price instability.
- Urgent Need for Diversification: India has been compelled to diversify its energy sources, both geographically and technologically (i.e., embracing renewable energy), to mitigate these risks.

Table 1: India's Energy Import Dependency (2023-24)

Commodity	Import Dependency (%)	Major Import Sources
Crude Oil	84%	Iraq, Saudi Arabia, Russia
LNG	53%	Qatar, USA, Australia
Coal	23%	Indonesia, Australia, South Africa

Source: Ministry of Petroleum and Natural Gas, India, 2024

1.6 Strategic Response to High Dependency

In response to its high energy import dependency, India has initiated several measures:

- Enhancing Strategic Petroleum Reserves (SPR) to provide buffer stocks during crises.
- Negotiating long-term LNG contracts to avoid price volatility.
- Diversifying crude oil import sources (e.g., boosting imports from Russia post-2022).
- Increasing investments in renewable energy (solar, wind, bioenergy) to reduce fossil fuel dependence.

- Encouraging domestic exploration and production under new hydrocarbon policies.

These steps reflect India's recognition of the need to balance its energy import strategy with greater self-reliance and domestic capability development.

1.7 Future Prospects

India's energy landscape is undergoing transformation with ambitious plans for clean energy adoption and a shift toward domestic energy production. However, in the short to medium term, high import dependency will continue, making the diversification of energy sources, development of alternative trade corridors, and strengthening of strategic reserves critical components of India's energy security strategy.

2. IMPACT OF COVID-19 ON GLOBAL ENERGY SUPPLY CHAINS

The COVID-19 pandemic, which emerged in late 2019 and escalated into a global health emergency by early 2020, had profound and unprecedented effects on global energy supply chains. As nations grappled with lockdowns, restrictions on industrial activity, travel bans, and health emergencies, the energy sector faced its most significant disruption in modern history. These disruptions spanned the entire energy value chain—from upstream exploration and production activities to midstream logistics and downstream consumption.

For India, as a heavily energy-importing country, these global disruptions translated into direct domestic challenges, affecting import volumes, prices, and energy availability. This section comprehensively examines the cascading impacts of the pandemic on global energy systems and India's energy market.

2.1 Global Production Disruptions

One of the first and most severe impacts of the pandemic was the disruption of upstream energy production activities worldwide. Oil-producing countries were forced to shut down exploration and drilling activities due to:

- **Workforce shortages** caused by quarantine protocols and infection outbreaks on offshore rigs and mining sites.

- **Supply chain bottlenecks** that restricted the availability of essential equipment and materials required for energy production.
- **Operational shutdowns** of major oil and gas fields as a result of government-imposed lockdowns in producing nations.

For example:

- In the **United States**, shale oil production in Texas and North Dakota was drastically curtailed as operational costs far exceeded market prices during the demand slump.
- **LNG liquefaction plants in Australia, Qatar, and the U.S.** faced production slowdowns as contracted workers could not travel, and health safety measures limited site activities.
- **Coal mining operations** in Indonesia, Australia, and South Africa were temporarily halted or operated at reduced capacity due to local COVID outbreaks and logistical constraints.

As a result, the pandemic severely disrupted the steady flow of energy commodities into the global supply chain, creating bottlenecks that reverberated through energy-importing countries like India.

2.2 Demand Collapse and Price Crash

As the pandemic escalated, national lockdowns and restrictions on air travel, automobile transportation, and industrial manufacturing caused a historic **collapse in global energy demand.** This sudden drop in consumption triggered one of the most dramatic price crashes in the history of modern energy markets.

- In **April 2020**, the price of **West Texas Intermediate (WTI) crude oil**—the U.S. oil benchmark—briefly turned **negative (-$37.63 per barrel)** for the first time ever. This anomaly was driven by storage shortages and panic selling by traders with no capacity to accept physical delivery.
- **Brent crude oil prices** fell below **$20 per barrel**, levels not seen since the early 2000s.
- **LNG spot prices** in Asia plummeted as key buyers in Japan, South Korea, and India reduced cargo bookings.
- **Global coal demand** slumped as power plants, steel mills, and cement factories operated at reduced capacity.

These extreme price volatilities created enormous uncertainty for energy importers like India regarding the renegotiation of contracts, adjustments in supply schedules, and planning for strategic reserves.

2.3 India's Energy Market Repercussions

India, as a major energy importer, experienced significant downstream impacts from these global disruptions. The repercussions were felt across multiple fronts:

2.3.1 Crude Oil Imports

- **Reduction in Crude Oil Imports:** India's crude oil imports declined by approximately **10% during FY2020-21** as domestic demand collapsed under nationwide lockdown conditions. With transportation services suspended and industrial output curtailed, consumption of petrol, diesel, and jet fuel fell drastically.
- **Refinery Throughput Decline:** Major refineries, such as those operated by Indian Oil Corporation (IOC) and Reliance Industries, operated at **below 70% capacity utilization,** further reducing crude import requirements.

2.3.2 LNG Imports

- **Cargo Cancellations and Delays:** Spot LNG cargoes bound for Indian ports faced **cancellations or rescheduling**, as domestic industrial and power generation demand dropped.
- **Term Contract Adjustments:** India's long-term LNG contracts, particularly with Qatar and the U.S., were renegotiated to accommodate deferments and reduce penalties for unused deliveries.
- **Price Volatility Impact:** The extreme volatility in LNG prices complicated procurement strategies, forcing Indian buyers to reassess spot market purchases versus term contracts.

2.3.3 Coal Imports

- **Port Disruptions:** Several Indian ports, such as **Paradip and Vizag,** faced severe congestion and delays due to labor shortages, health

inspections, and logistical constraints, delaying coal discharge and transportation to end users.

- **Reduced Industrial Demand:** The shutdown of steel, cement, and thermal power plants during lockdown periods resulted in **lower coal import volumes,** especially of non-coking coal used for energy generation.

2.3.4 Domestic Market Effects

- **Inventory Pile-ups:** Petroleum products, LNG, and coal inventories rose as consumption stagnated, causing storage constraints across the country.
- **Price Transmission Effects:** Despite low international prices, domestic retail prices did not fall proportionally due to government excise duty increases aimed at revenue generation, highlighting fiscal policy adjustments during the crisis.
- **Strategic Reserves Fill-up:** The Indian government utilized the low crude prices to **top up its Strategic Petroleum Reserves (SPR),** securing an estimated additional **5.33 million tonnes** of crude oil at favorable rates.

2.4 Lessons Learned for Future Resilience

The pandemic highlighted India's vulnerability to external supply chain shocks and emphasized the need for:

- **Diversification of import sources** to avoid over-reliance on any single supplier nation or region.
- **Development of domestic energy production**, particularly for natural gas and renewable energy, to mitigate import dependence.
- **Enhancement of storage capacities** for crude oil, LNG, and coal to buffer against future supply disruptions.
- **Strengthening of port and logistical infrastructure** to ensure uninterrupted commodity flows even during global crises.

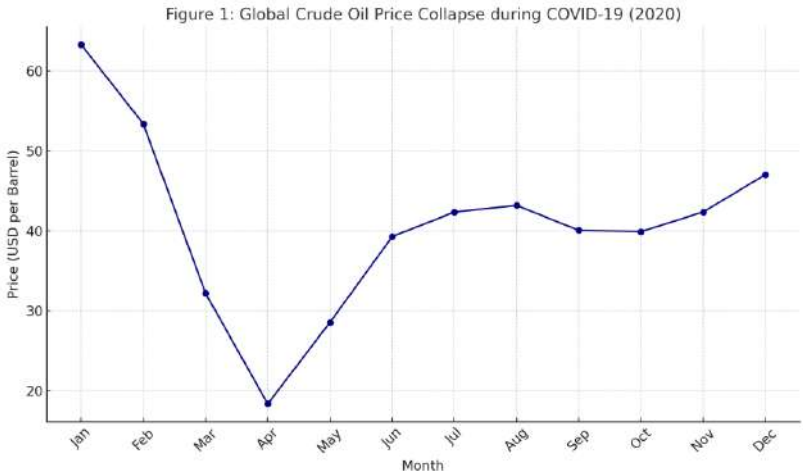

Figure 1: Global Crude Oil Price Collapse during COVID-19 (2020)
Source: U.S. Energy Information Administration (EIA), 2021

In summary, the COVID-19 pandemic served as a stress test for India's energy market preparedness. While India leveraged the global price crash to bolster its reserves, the disruption exposed structural weaknesses in energy logistics, storage, and supply security that need urgent attention for future crisis resilience.

3. RUSSIA-UKRAINE WAR: AN ENERGY SHOCKWAVE

The **Russia-Ukraine war**, which erupted in February 2022, unleashed a seismic shock across the global energy landscape. As one of the world's largest energy exporters, Russia's ability to supply oil, natural gas, and coal to major global markets was profoundly affected by the imposition of Western sanctions. These sanctions, coupled with supply chain disruptions and logistical challenges in the Black Sea region, led to price surges, market realignments, and trade route shifts—transforming the global energy order overnight.

For India, this conflict brought both opportunities and risks. On one hand, India gained access to deeply discounted Russian crude oil, but on the other hand, the global spike in liquefied natural gas (LNG) and coal prices raised import costs, impacting energy affordability and industrial competitiveness.

3.1 Sanctions and Supply Rerouting

In the immediate aftermath of Russia's invasion of Ukraine, the United States, European Union, and allied nations imposed a series of **comprehensive economic sanctions on Moscow,** targeting:

- Russia's financial institutions
- Oil and gas sector operations
- Maritime transport of energy commodities
- Technology and equipment sales crucial for energy production

These sanctions created substantial barriers for Russia's traditional energy exports to Western markets, particularly **Europe**, which had historically relied on Russia for over **40% of its natural gas** and significant oil volumes.

Russia's Pivot to Asian Markets: India as a Major Beneficiary

In response, Russia rapidly redirected its energy exports toward **Asia**, where countries like India and China, not party to the Western sanctions regime, emerged as critical alternative markets. India, seeking to capitalize on this geopolitical realignment, ramped up imports of Russian crude at heavily discounted prices—reportedly saving billions in its energy import bill.

- **Crude Oil:** By 2023, Russia became **India's largest crude oil supplier,** overtaking Iraq and Saudi Arabia. Indian refiners, such as **Indian Oil Corporation (IOC)** and **Reliance Industries,** aggressively procured Russian Urals crude, which was priced significantly below global benchmarks like Brent.
- **Diversification Strategy:** This sudden shift diversified India's oil import portfolio, reducing its reliance on Middle Eastern supplies and providing Indian refiners with better profit margins.

Implications for Energy Diplomacy

While India benefited economically, its energy relationship with Russia attracted scrutiny from Western allies, necessitating careful diplomatic balancing to protect its broader foreign policy interests.

3.2 Impact on LNG and Coal

LNG Market Disruptions

Russia's pipeline gas exports to Europe plummeted following the war, as flows through pipelines like **Nord Stream 1 and 2** were halted or severely reduced. Europe's shift to alternative LNG suppliers caused an abrupt surge in global LNG demand, impacting spot market prices and availability for Asian buyers, including India.

- **Global LNG Spot Price Surge:** The spot price of LNG in Asia, measured by the **Japan-Korea Marker (JKM),** soared by over **300% between 2021 and 2023**, making LNG procurement significantly costlier for Indian buyers.
- **India's Strategic LNG Procurement:** To shield itself from this volatility, India prioritized **long-term LNG contracts** with Qatar, the United States, and Australia. These contracts offered price stability compared to the hyper-volatile spot market.

Coal Market Disturbances

- **Thermal and Metallurgical Coal:** Although India's coal imports from Russia are limited, the global ripple effects of Russian coal sanctions in Europe and Japan strained the global coal market, causing prices to spike.
- **Price Inflation:** International thermal coal prices surged, forcing India to **secure additional volumes from Indonesia and Australia,** while accelerating domestic coal production under Coal India Limited (CIL) to meet power sector demands.

3.3 Price Volatility and Supply Risk

The Russia-Ukraine conflict triggered **one of the most volatile pricing periods** in modern energy history. For India, the financial implications of this volatility were profound, especially for oil and LNG imports.

Crude Oil Price Surge

- **Brent Crude Price:** The average price of **Brent crude oil rose to $98 per barrel in 2022,** up from around **$65 per barrel in 2020,** reflecting the market's supply fears and geopolitical risk premium.

- Despite this global trend, India's access to **discounted Russian crude** mitigated the full impact of these price increases on its import bill.

LNG Price Explosion

- **LNG Spot Price Increase:** Spot LNG prices in Asia skyrocketed by nearly **300% from 2021 to 2023,** largely due to Europe's frantic buying to replace Russian pipeline gas.
- **Impact on India:** Indian industries—especially power generation, fertilizers, and petrochemicals—faced higher input costs, straining profit margins and threatening the competitiveness of gas-based industries.

Coal Price Dynamics

- **Global Thermal Coal Prices** reached unprecedented highs, exceeding **$400 per metric tonne** at peak times in 2022, before stabilizing by 2023.

Table 2: Global Energy Price Indicators Pre- and Post-Russia-Ukraine War

Commodity	2020 Average Price	2022 Average Price	% Change
Brent Crude ($/barrel)	$65	$98	+50%
LNG Spot (JKM) ($/MMBtu)	$6.5	$28	+330%
Thermal Coal ($/MT)	$80	$400	+400%

Source: Bloomberg, IEA, 2023

3.4 Strategic Implications for India

The war highlighted the urgency for India to:

- **Secure diversified energy sources** beyond traditional suppliers to reduce exposure to geopolitical shocks.
- **Strengthen domestic production capabilities**, especially in coal and renewables, to limit import dependence.
- **Enhance energy storage and reserve capacities** for oil and LNG.
- **Develop alternative trade corridors,** such as the **Chabahar Port** in Iran and the **International North-South Transport Corridor (INSTC)**, to circumvent risky maritime chokepoints.

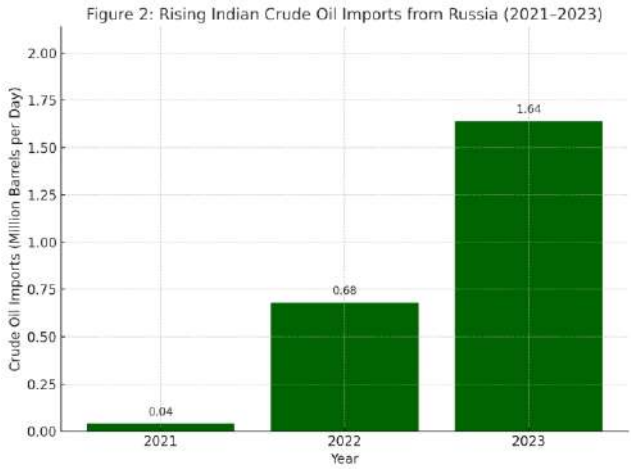

Figure 2: Rising Indian Crude Oil Imports from Russia (2021-2023)
Source: Ministry of Commerce, India, 2023

In summary, while the Russia-Ukraine war disrupted global energy flows and spiked commodity prices, India adeptly navigated this turmoil through opportunistic procurement, diversified sourcing, and diplomatic flexibility. However, the episode reinforced India's vulnerability to global geopolitical shocks, underscoring the need for deeper energy security reforms.

4. INDIA'S STRATEGIC RESPONSE

The twin shocks of the COVID-19 pandemic and the Russia-Ukraine conflict severely tested India's energy security framework. Faced with extreme price volatility, supply uncertainty, and shifting geopolitical alignments, India responded proactively with a multi-pronged strategy designed to insulate its economy from future disruptions. The government's energy policy response emphasized diversification of supply sources, expansion of domestic reserves, and strengthening of infrastructural capabilities to build long-term resilience.

4.1 Diversification of Crude Oil Sources

One of the most significant pillars of India's strategic response was the **aggressive diversification of crude oil imports,** aimed at reducing over-reliance on Middle Eastern suppliers and capturing cost advantages in turbulent markets.

Shift towards Russian Crude

Before the Russia-Ukraine war, Russia's share in India's crude basket was minimal—around **2% in 2021**. However, following the imposition of Western sanctions on Russian oil exports, India capitalized on the availability of **deeply discounted Russian Urals crude,** which was being shunned by Western markets.

- By the end **of 2023, Russia emerged as India's top crude oil supplier**, accounting for **more than 20%** of total imports—a tenfold jump from pre-war levels.
- Key refiners like **Indian Oil Corporation (IOC), Bharat Petroleum Corporation Limited (BPCL),** and **Reliance Industries** aggressively procured Russian cargoes, significantly lowering the average import cost per barrel.

Other Diversification Initiatives:

To maintain geopolitical balance and avoid overdependence on Russia, India also expanded its energy sourcing agreements with:

- **Iraq and Saudi Arabia:** Long-standing suppliers providing stable volumes at benchmark-linked prices.
- **The United States and Brazil:** Newer partners offering light sweet crude to diversify the product slate of Indian refineries.

This supply reconfiguration reduced vulnerability to any single regional risk, enhancing India's energy security outlook.

4.2 LNG Import Expansion

Liquefied natural gas (LNG) forms a growing component of India's energy basket, especially for **city gas distribution, fertilizers, and power generation**. In the face of soaring global LNG spot prices, India prioritized securing **long-term supply contracts** to reduce exposure to volatile short-term markets.

Securing Long-Term Contracts:

- **Qatar:** As India's largest LNG supplier, Qatar remains central to India's energy security. In 2023, India renewed and expanded **long-term**

contracts with QatarEnergy, locking in steady supplies at competitive rates.

- **United States:** India increased term contracts with **Cheniere Energy and other US exporters,** ensuring additional cargoes under Henry Hub-indexed pricing mechanisms. These deals provided relief from Asian spot prices, which had spiked dramatically after the Russia-Ukraine conflict.
- **Australia:** Discussions on expanded LNG imports from Australia further strengthened India's gas import stability.

Impact on the Domestic Market:

- These LNG contracts have stabilized gas availability for **urban gas networks** and **industrial sectors**, enabling continued progress in India's national gas grid development.
- LNG import terminals like **Dahej, Kochi, and Ennore** have been upgraded to handle the increased volumes.

4.3 Increased Coal Imports

India remains the **second-largest coal importer** globally, despite being rich in domestic coal reserves. Short-term logistical and quality issues, coupled with surging power demand, compelled India to boost coal imports as a critical stopgap measure.

Role of Australia and Indonesia:

- **Australia** and **Indonesia** emerged as pivotal coal suppliers during 2022-2023, accounting for more than **65% of India's thermal coal imports**.
  - Australia supplied high-grade coking coal, essential for India's burgeoning steel sector.
  - Indonesia remained the top source of affordable thermal coal, suitable for India's coastal power plants.

Import Surge Dynamics:

- Due to the post-pandemic economic recovery and an unseasonal heatwave in 2022, India's electricity demand spiked, causing power plants to **deplete domestic coal stocks rapidly.**

- In response, the government instructed state-run utilities and private generators to import coal to prevent blackouts, especially in power-starved regions like **Tamil Nadu, Maharashtra, and Uttar Pradesh.**

Domestic Production Boosts

While imports surged temporarily, Coal India Limited (CIL) also accelerated domestic mining efforts to reduce the medium-term import burden. However, infrastructure bottlenecks—like rail connectivity and port capacity—limited the immediate substitution of imports with domestic coal.

Table 3: India's Key Energy Supply Diversification Moves (2022-2023)

Energy Source	Pre-Disruption Share (%)	Post-Disruption Share (%)	New/Expanded Suppliers
Crude Oil	Russia (2%), Middle East (65%)	Russia (20%), Middle East (50%)	Russia, USA, Brazil
LNG	Qatar (60%), Spot (20%)	Qatar (55%), USA (20%)	USA, Australia, Qatar
Coal	Indonesia (45%), Australia (20%)	Indonesia (50%), Australia (25%)	Australia, Indonesia, South Africa

Source: Ministry of Petroleum & Natural Gas, 2024; Coal India Ltd., 2024

4.4 Strategic Petroleum Reserves (SPR) Expansion (Additional Elaboration)

Recognizing the risk of supply shocks, India accelerated the development of its **Strategic Petroleum Reserves (SPR):**

- New reserve capacities added at sites like **Chandikhol (Odisha)** and **Padur (Karnataka).**
- These facilities provide a buffer of **39 million barrels**, capable of sustaining oil demand for 10-15 days during extreme disruptions.

4.5 Energy Infrastructure Development (Additional Elaboration)

To reduce logistical risks:

- **Chabahar Port Development** in Iran progressed as an alternative to the **Strait of Hormuz choke point**.
- Participation in the **International North-South Transport Corridor (INSTC)** aims to facilitate overland crude and LNG imports from Russia and Central Asia.

Figure 3: Flowchart of India's 4-Pronged Strategic Energy Response

In summary, India's strategic response to the compounded global energy disruptions was multifaceted, blending **import diversification, long-term contracting, emergency reserves expansion,** and **infrastructure modernization.** These measures reflect a shift towards a more resilient, flexible energy procurement policy suited to the complexities of a geopolitically uncertain world.

5. DOMESTIC ENERGY REFORMS AND POLICY SHIFTS

In addition to its international strategic maneuvers, India launched a series of **domestic energy sector reforms** to reduce dependence on global

imports and to cushion the economy against future external shocks. These reforms focused on enhancing domestic production, revising pricing mechanisms, boosting renewable energy deployment, and upgrading energy infrastructure to promote long-term self-reliance.

5.1 Domestic Crude Oil and Gas Exploration

Recognizing the critical need to reduce crude and gas import dependency, India intensified efforts to unlock its **untapped hydrocarbon potential** under the ambitious **Hydrocarbon Exploration and Licensing Policy (HELP):**

- **Increased Acreage Allocation:** The government offered over **1.2 million square kilometers** for exploration under the **Open Acreage Licensing Policy (OALP)** rounds since 2018, attracting both public and private sector players.
- **Ease of Licensing:** A single, unified licensing regime covering oil, gas, coal-bed methane (CBM), and shale gas was introduced, with simplified revenue-sharing models to attract foreign direct investment (FDI).
- **Incentives for Deep Water Exploration:** Tax holidays, duty exemptions, and marketing freedom were provided for exploration in **difficult terrains such as the Bay of Bengal and offshore western India.**

These steps aimed to boost India's domestic oil and gas production, which has stagnated over the last decade.

5.2 Energy Subsidy Rationalization

India reformed its **subsidy structure** for petroleum products to align domestic fuel prices with global market trends, thus reducing the fiscal burden and promoting energy efficiency:

- **Kerosene Subsidy Reduction:** Subsidy allocation for kerosene was drastically reduced as electrification and LPG coverage improved across rural areas.
- **LPG Price Decontrol:** The government removed direct LPG subsidies for economically stronger households, retaining support only for beneficiaries under the **Pradhan Mantri Ujjwala Yojana (PMUY).**

- **Fuel Price Deregulation:** Petrol and diesel prices were deregulated, allowing oil marketing companies (OMCs) to adjust pump prices based on international benchmarks.

  Impact:
- Enhanced fiscal space for infrastructure spending.
- Market-driven fuel prices helped reflect global cost variations, discouraging overconsumption.

5.3 Boosting Renewable Energy Deployment

To address both import dependency and climate commitments under the **Paris Agreement,** India rapidly expanded its renewable energy capacity:

- **Solar and Wind Expansion:** As of 2024, India has installed over **125 GW** of renewable energy capacity, with plans to reach **500 GW by 2030** under the **National Solar Mission** and **Wind Energy Mission**.
- **PM-KUSUM Scheme:** Launched to promote **solar pumps and small-scale renewable projects** for agriculture, reducing diesel and grid electricity reliance in rural areas.
- **Green Hydrogen Mission:** Announced in 2023 with a target to produce **5 million metric tonnes per annum** of green hydrogen by 2030, focusing on ammonia and methanol production as alternatives to imported LNG.

Table 4: India's Renewable Energy Targets

Energy Source	Installed Capacity (2024, GW)	Target (2030, GW)
Solar	72	280
Wind	43	140
Small Hydro	4.9	10
Biomass	10	20

Source: Ministry of New and Renewable Energy, 2024

5.4 Strengthening Strategic Petroleum Reserves (SPR)

The government also boosted its emergency oil storage under the **Strategic Petroleum Reserve (SPR) Program:**

- Expanded SPR capacity to cover **15 days of net crude imports.**

- Planned future SPR sites at **Rajkot (Gujarat)** and **Bikaner (Rajasthan).**
- Encouraged **public-private partnerships (PPPs)** for commercial leasing of SPR capacity.

These reserves act as a critical buffer against sudden supply shocks, such as those experienced during the pandemic or geopolitical conflicts.

5.5 Infrastructure Modernization

India prioritized modernization of its energy handling infrastructure to **minimize logistical bottlenecks** and enhance supply chain resilience:

- **Port Capacity Enhancement:** Expansion of LNG regasification terminals at **Dahej, Ennore, Dhamra,** and development of **deep-draft ports** for coal and crude handling.
- **Pipeline Network Development:** Construction of **11,000 km of natural gas pipelines** under the **National Gas Grid,** connecting eastern and northeastern regions to industrial centers.
- **Smart Grid Implementation:** Deployment **of smart metering, real-time load balancing,** and **grid-scale battery storage** to accommodate higher renewable energy penetration.

5.6 Policy Incentives for Private Sector Participation

To catalyze investment in the energy sector, the government introduced several **pro-business policies:**

- **Production-Linked Incentive (PLI) Schemes** for solar PV manufacturing, battery storage systems, and green hydrogen electrolyzers.
- 100% **FDI allowance in petroleum refining (private sector)** and **renewable energy sectors.**
- Liberalized **coal mining policy** (Commercial Mining Auctions) to allow private companies unrestricted sale in the domestic market.

5.7 Emphasis on Energy Efficiency

India's strategy also integrated energy efficiency measures to reduce import demand growth:

- **Perform Achieve Trade (PAT) Scheme:** Industrial energy-intensive sectors like cement, steel, and aluminum required to meet energy-saving targets.
- **Faster EV Adoption:** The **Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) India Scheme** was extended to 2025, offering financial incentives for electric two-wheelers, cars, and buses.

5.8 State-Level Reforms and Regional Diversification

Energy reforms were also decentralized, with states implementing tailored strategies:

- **Gujarat, Rajasthan, and Tamil Nadu** led renewable energy parks.
- **Odisha and Jharkhand** boosted coal production with environmental safeguards.
- **Andhra Pradesh and Maharashtra** advanced LNG terminal projects and green hydrogen hubs.

Summary of Domestic Reforms

Reform Area	Key Measures	Expected Outcome
Oil & Gas Exploration	OALP, HELP policy incentives	Increased domestic crude & gas output
Subsidy Rationalization	Deregulated petrol/diesel prices, LPG subsidy targeting	Fiscal savings, market alignment
Renewable Energy	PM-KUSUM, Solar Parks, Green Hydrogen Mission	Reduced fossil fuel import dependency
Strategic Reserves	SPR expansion	Supply shock insulation
Infrastructure Development	Port, pipeline, smart grid upgrades	Reduced transport & processing risks
Private Sector Involvement	FDI, PLI schemes, commercial coal mining	Enhanced private investment
Energy Efficiency	PAT, FAME India scheme	Slower demand growth for oil & gas

In conclusion, India's domestic energy reforms represent a **structural shift towards self-reliance, sustainability, and resilience.** These measures not only mitigate the impact of global supply chain disruptions but also prepare the country for its long-term energy security needs amidst an evolving global energy landscape.

6. Infrastructure and Trade Route Initiatives

India's efforts to strengthen its energy security have increasingly emphasized the development of alternative trade routes and strategic infrastructure aimed at reducing dependence on traditional, vulnerable maritime chokepoints like the Strait of Hormuz.

6.1 Chabahar Port Development

The Chabahar Port in Iran is a critical component of India's regional connectivity and energy import diversification strategy. Unlike the congested and politically sensitive Strait of Hormuz, Chabahar offers a stable and secure maritime route for energy shipments. The port provides India direct access to Afghanistan, Central Asia, and Russia, bypassing Pakistan, and serves as a gateway for potential energy pipelines and trade corridors. India's investment in developing terminals, cargo handling, and connectivity infrastructure at Chabahar ensures an uninterrupted supply of crude oil and LNG from the Middle East, especially during geopolitical tensions in the Gulf region.

6.2 International North-South Transport Corridor (INSTC)

The INSTC is a multi-modal trade corridor connecting India with Russia, Central Asia, and Europe via Iran. This 7,200 km route reduces transit time and cost compared to the Suez Canal pathway. For energy imports such as LNG, crude oil, and coal, the INSTC provides diversification away from volatile maritime zones and fosters enhanced bilateral energy cooperation with Eurasian suppliers.

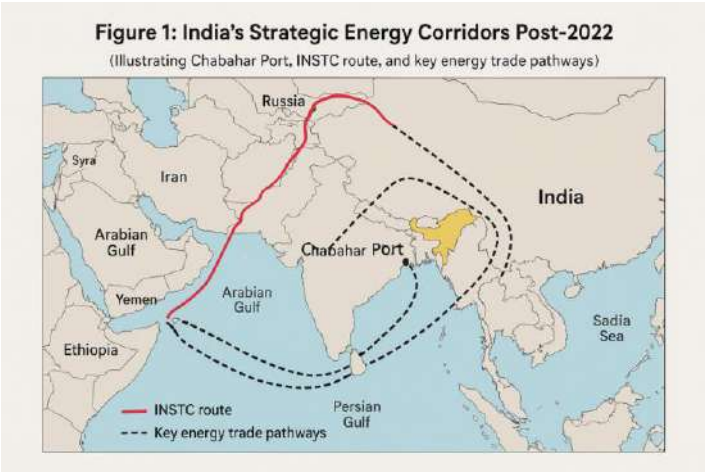

Figure 4: India's Strategic Energy Corridors Post-2022
(Illustrating Chabahar Port, INSTC route, and key energy trade pathways)

7. RENEWABLE ENERGY INTEGRATION AS A LONG-TERM SOLUTION

In light of repeated global supply chain disruptions, India has prioritized **renewable energy integration** as a sustainable, long-term strategy to reduce its dependency on imported fossil fuels. The government's ambitious **National Hydrogen Mission**, launched in 2023, aims to establish India as a global hub for **green hydrogen production,** with a target of generating **5 GW by 2030** from nearly negligible capacity today. Simultaneously, the country is fast-tracking solar and wind energy installations to diversify its energy mix. India's solar power capacity, standing at **73 GW in 2024**, is projected to grow nearly fourfold to **280 GW by 2030**, while wind energy is expected to rise from **45 GW to 140 GW** in the same period. These initiatives not only support energy security but also align with India's **net-zero emissions target by 2070**, significantly decreasing the country's reliance on volatile fossil fuel markets and imported energy resources.

Table 2: India's Renewable Energy Targets (2024-2030)

Energy Source	2024 Capacity (GW)	2030 Target (GW)
Solar	73	280
Wind	45	140
Hydrogen (Green)	1.5	5

Source: Ministry of New and Renewable Energy, 2024

8. REGIONAL AND BILATERAL PARTNERSHIPS

India's energy security strategy has been greatly reinforced through the development of **regional and bilateral partnerships**, particularly in the wake of global supply chain disruptions.

8.1 Middle East Diplomacy

The Middle East remains a cornerstone of India's energy import strategy. India has deepened diplomatic and trade relations with key suppliers like **the United Arab Emirates (UAE) and Saudi Arabia.** These partnerships have provided India with **price stability, assured supply chains, and investment opportunities** in upstream energy assets.

8.2 Russia-India Energy Deals

Post-2022, India leveraged its neutral geopolitical stance to secure discounted crude oil and thermal coal from Russia**,** despite Western sanctions. This diversification reduced India's reliance on Middle Eastern energy supplies and insulated the country from volatile global price swings.

9. CHALLENGES AND RISKS

Despite India's robust efforts to diversify energy sources and improve infrastructure, the country continues to face several **critical challenges and risks** that could impede long-term energy security.

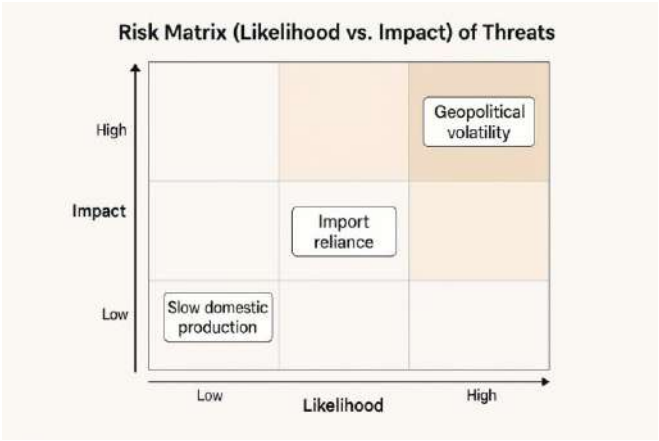

Figure 5: Risk Matrix of Strategic Energy Threats (Impact vs. Likelihood)

9.1 Geopolitical Volatility

India's energy supply chains remain susceptible to **geopolitical shocks.** The Middle East, a key supplier of crude oil and LNG, is a region prone to conflict, as seen during tensions in the Strait of Hormuz or the Israel-Iran standoff. Similarly, while discounted Russian crude has benefited India, any intensification of Western sanctions or deterioration in India-Russia relations could constrain these supplies, disrupting both price stability and availability.

9.2 Over-Reliance on Imports

India's energy import dependency remains structurally high, with over **80% reliance on imported crude oil** and significant LNG and coal imports. This dependency exposes the economy to global market volatility, currency risks, and supply disruptions, undermining the effectiveness of diversification and strategic reserves in fully shielding the domestic market.

9.3 Slow Domestic Production Growth

Despite liberalized policies and new exploration incentives, India's **domestic production of oil and gas remains stagnant.** Challenges such as difficult geology, technological gaps, and regulatory hurdles prevent substantial growth in indigenous output, limiting the country's ability to achieve self-sufficiency in hydrocarbons.

10. OPPORTUNITIES AHEAD

1. **Green Hydrogen Economy**
   - India aims to become a global hub for green hydrogen production and export under the National Hydrogen Mission.
   - Plans to leverage abundant solar and wind resources to produce low-cost green hydrogen.
   - Potential to supply hydrogen to energy-deficient regions such as Europe and East Asia, reducing dependency on fossil fuels.
2. **Expansion of Domestic Solar PV Manufacturing**
   - India is scaling up domestic manufacturing of solar panels to reduce import dependency (especially on China).
   - Aligned with the government's Atmanirbhar Bharat (Self-Reliant India) vision.
   - Encourages export of solar technology to neighboring countries and emerging markets.
3. **Regional Grid Integration and Cross-Border Energy Trade**
   - India is working on grid connectivity with Nepal, Bhutan, and Bangladesh under the SAARC energy cooperation framework.
   - Potential for cross-border electricity trade, especially in renewable energy (hydropower from Bhutan, solar from India).
   - Enhances grid stability, energy diplomacy, and regional economic cooperation.
4. **Growing Private Sector Participation**
   - Increased interest from global and domestic private players in India's renewable and hydrogen sectors.
   - Encouragement through incentives, production-linked incentives (PLI) schemes, and favorable policies.
5. **Technological Innovations and R&D**
   - Opportunities for investment in energy storage solutions, smart grids, and carbon capture technologies.
   - Development of advanced battery technologies and energy efficiency solutions for industrial and transport sectors.

Figure 6: Roadmap of India's Energy Security Strategies – Short-Term vs. Long-Term Actions

11. CONCLUSION AND FUTURE OUTLOOK

India's response to the unprecedented global energy supply chain disruptions caused by the **COVID-19 pandemic and the Russia-Ukraine conflict** showcases a blend of **pragmatism, adaptability, and strategic foresight.** By swiftly diversifying its sources of crude oil, liquefied natural gas (LNG), and coal, India reduced its overdependence on traditional suppliers and cushioned itself against extreme price volatility and potential supply shocks. The increased procurement of **discounted Russian crude,** along with long-term LNG agreements with **Qatar and the USA,** underlines this calculated diversification approach.

Simultaneously, India's expansion of **Strategic Petroleum Reserves (SPR)** and infrastructural developments such as the **Chabahar Port and INSTC corridor** demonstrate proactive measures to safeguard energy imports from geopolitical uncertainties and maritime chokepoints. At the domestic front, policy reforms to boost private sector participation in exploration, subsidy rationalization, and the push towards renewables (through solar, wind, and green hydrogen) point to a long-term structural shift towards **energy self-reliance** and sustainability.

However, the journey towards complete energy resilience is far from over. India still faces persistent challenges such as **high import dependency, s**tagnant domestic oil and gas production, and exposure to global geopolitical risks. To address these, India must **accelerate domestic energy production, scale up renewable capacity aggressively,** and deepen **regional energy cooperation** with neighboring countries.

The future of India's energy security lies in a **balanced energy mix,** enhanced technological innovation, and active global energy diplomacy. By focusing on renewable integration, indigenous capacity building, and strategic partnerships, India can transform these global disruptions into an opportunity for creating a more **resilient, sustainable, and secure energy ecosystem** in the decades ahead.

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