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Long-Term Energy Contracts and Their Hidden Costs: Analysing India's Commitment Risks in Russian Oil and Nuclear Deals

Urvashi Singh[1] **Showkat Ahmad Dar**[2]

[1] *Research Scholar of Political Science, Sharda School of Humanities and Social Science, Sharda University, Greater Noida, India.*

[2] *Assistant Professor, Sharda School of Humanities and Social Science, Sharda University, Greater Noida, India.*

*** Corresponding Author:**

Urvashi Singh
Email: urvashis192@gmail.com

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ABSTRACT

Long term energy deals are usually brought up as an image of stability, strategic trust and win. However, behind the scenes of these patterns are significant processes that are not closely examined. With the growing oil supply and nuclear energy projects that have seen India and Russia liaise closer, there are concerns regarding the long-term consequences of the commitments. What seems to be a safe alliance can include trade-offs that cannot be noticed at first sight in formal contracts or media statements. The paper examines the changing character of long-term energy contract between the two nations with emphasis on uncertainties that envelop the contract. The sustainability of such arrangements should not be assumed in a time when alliances are changing, markets are variable, and geopolitical demands have never been as high as they are now. Sanctions, price volatility, logistical constraints, and technological dependencies can remodel the expectations which initially informed such partnerships. This paper aims to dig deeper into the problems in these contracts to get the real aspects of the strategic and economic understanding behind these contracts. The analysis of the changing global energy picture poses some key questions regarding sustainability and resilience and the actual cost of long-term commitments in a world that is becoming more uncertain.

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INTRODUCTION

The Indian-Russian energy cooperation has gone to become among the most important venues of the strategic relationship between the two countries. This partnership is based on the cooperation between India and the Soviet Union of the Cold War era, which has been gradually growing in both defence and technical assistance and energy cooperation of large scale (Stobdan, 2010).[1]In the last 20 years Russia has become a very important supplier of hydrocarbons and nuclear technology to India and India has turned into a significant market and investment partner in Russian energy projects. The Indian state firms have made investment in Russian oil fields including Sakhalin-1, Vankorneft and Taas-Yuryakh as part of a long-term investment in bilateral energy relations (Kapoor, 2019).[2]

There can be no overvaluation of the significance of long-term oil and nuclear contracts in this relationship. India being one of the fastest growing major economies in the world is highly dependent on imported energy to support the industrial growth and urbanization. As a result of discounted supplies after Western sanctions on Moscow, Russia provides over 30-40 percent of the annual Indian crude oil imports, which is a drastic increase compared to just approximately 3 percent in 2021(Menon& Rumer,2022).[3] Such advances made Russia the biggest supplier of crude in India and strengthen the strategic rationale of long-term energy deals. Cooperation has also played an important role in the nuclear front. The Kudankulam Nuclear Power Project, developed on Russian VVER (Vodo-Vodyanoi Energetic Reaktor), also known as Water-Water Energetic Reactor, is a technology with an eye towards a multitude of units, and long-term fuel supply and lifecycle support contracts(Kumar,2025).[4]

The world of energy and geopolitics has been transformed over the past few years. The conflict between Russia and Ukraine and the regime of the Western sanctions has made a new line of international oil flows, financial systems, and chain of supply. The restriction of Russian firms and tanker voyage has sometimes paralyzed the convenience of Indian crude oil and the refiners have been forced to find other alternatives(Sahni, 2024).[5]The inability of the long-term commitments to remain stable can be observed by the Russian oil supply to India within a specific month having significantly diminished due to restrictions associated with the sanctions. The existence of such upheavals shows that a direct effect of a geopolitical conflict, financial limitation and regulatory forces can be directly applied on the previously intended energy contracts which were expected to create stability(Chanchala& Ringo, 2025).[6]

India and Russia in this dynamic environment have the prospects and hidden threats in their long-term bilateral energy deals. In spite of such contracts being stable in prices, assured in supply and strategically aligned, these types of contracts are also vulnerable to exposures to sanctions, variability in price changes and changing geopolitical orientations (Sim,2024).[7] These are not issues that are exclusive to India because Russia has had its fair share in terms of their dependency as far as market dependency is concerned, mode of payment and the ability to maintain the long-term supply agreement as long as the international pressure is on them (Chenoy, 2010).[8]

It is against this background that there are four underlying research questions in the current study. To begin with, what are the economic, political and supply-related risks of long-term India-Russia energy deals? Second, what are the financial or strategic expenses that lie hidden in these deals?Third, how do sanctions, price volatility and geopolitical changes affect the sustainability of long-term oil and nuclear deals? Finally, what are the prospects of these dynamics in terms of the general future of bilateral energy collaboration in the two countries?

The article seeks to provide responses to these questions to provide a comprehensive evaluation of the strategic trade-offs of long-term India-Russia energy deals within a period of geopolitical insecurity.

Background of the Study

The history of energy relations between India and Russia dates back to the Cold War period when the Soviet Union became one of the most viable strategic and economic allies of the Indian country. Although the initial collaboration was mainly limited to the defence, heavy industrial sectors, the energy aspect was steadily taking hold in the late twentieth century(Unnikrishnan& Dutta, 2023).[9] In 1988, long-term civil nuclear cooperation between the countries commenced with the two nations signing an intergovernmental agreement to construct nuclear reactors in Kudankulam site, Tamil Nadu (Mastny, 2010).[10]

The 2000s saw an increased cooperation in the hydrocarbon industry with Indian state-owned enterprises investing in Russian oil and gas development including Siberian and the Russian Far East fields. A new stage of the relationship developed after 2022 when Western sanctions against Russia after the conflict in Ukraine shifted large amounts of discounted crude to Asian markets(Debnath, 2024).[11] The import of Russian oil by India shot up and Russia became the largest supplier of crude imports to India, approximately 1/3 to almost 40 percent of total imports by 2023-2024.

The bilateral energy relations have been based on civil nuclear cooperation. Russia remains the only foreign nation taking active part in the development of nuclear power generation in India with several units already operational in the Kudankulam Nuclear Power Station with more being constructed or proposed (World Nuclear Association, 2026).[12]

These long-term agreements have strategic motives that are grounded on the need of both sides. India wants to maintain balanced and diversified sources of energy to maintain the high pace of economic growth and minimise price fluctuations whereas Russia considers India a vital long-term market in the context of the changing world energy demand and geo-political limitations. The convergence of these interests has promoted the quest of both parties to contract in the long term, yet these deals have financial, political, and strategic effects that need to be looked at closely (Kumagai, 2023).[13]

Problem of Statement

The common observation of long-term energy contracts between India and Russia can be viewed as the tool of stability and strategic alliance, but they have substantial hidden risks. The growing dependence on one of the key suppliers may lessen the flexibility of procurement and India may be vulnerable to both political, economic, and logistical risks. Short-term concentration risks were also intensified by the sharp increase in Russian oil imports after 2022, which enhanced the security of short-term supply. When markets across the globe change their position, the price mechanism on long-term arrangements will not be favourable and one will be unable to adjust to the cheaper or rather competitive options. The nuclear industry is a sector that may result in financial and technological dependence due to long-term technology and fuel supply contracts. In addition, geopolitical situations, including sanctions, limitations on payments, and shipping or insurance disruptions, have occasionally had an impact on supply chains, proving how prone long-term arrangements could be to outside influences. These predicaments demonstrate a significant necessity to critically assess the unseen economic, strategic, and geopolitical cost of India-Russia long-term energy arrangements.

Significance of the Study

The Study advances the current discussion on energy security because it discusses the risks and unseen prices of long-term bilateral energy contracts. It provides policy relevant information to the diversification policy of India especially in short-term stability in supply versus long term strategic flexibility. The research examines the economic and geopolitical aspects of India-Russia energy relations and indicates how strategic energy diplomacy presents a multifaceted challenge in the context of the quickly evolving world order. On an academic level, it contributes to the current literature by incorporating the economic, political and supply-based approaches and offers a more detailed insight into the long-term energy commitments and their extended geopolitical consequences.

Objectives

1. To evaluate the economic, political, and supply-related risks faced by India and Russia in signing long-term energy contracts for oil and nuclear cooperation.
2. To investigate the hidden financial and strategic costs embedded within long-term bilateral agreements between India and Russia in the energy sector.
3. To assess how uncertainties such as sanctions, price fluctuations, and geopolitical shifts affect long-term contract sustainability for both India and Russia.

Theoretical Framework

The researchers rely mostly on the Energy Security Theory that became popular following the world oil crises of the 1970s when interruption of supply revealed the fragility of the energy importers. This idea was uniquely expressed by Daniel Yergin in The Prize: The Epic Quest for Oil, Money, and Power (1991), where the state of energy security was established as the access to stable and affordable energy resources (Proskuryakova,

2018).[14] The theory focuses on the diversification of sources, consistent prices, and geopolitical resilience. It was institutionalised by the international energy organisations like the international energy agency which advocated about strategic reserves and cooperative policies. Within the framework of Indian-Russian cooperation in the energy sector, this theory defines why long-term contracts in oil and nuclear supplies are sought after to guarantee the constant supply and decrease the vulnerability to fluctuating international markets (Yergin,2006).[15] Nevertheless, it also brings forward the possible weaknesses, such as reliance on one supplier, being susceptible to sanctions, and lack of adaptability to altered market conditions (Yergin, 2020). [16]

In line with this is Complex Interdependence Theory that was created in the 1970s by Robert Keohane and Joseph Nye in Power and Interdependence. The theory developed out of the Cold War, and argued that the interdependence between states has been growing due to the economic, political, and institutional network, which influences the foreign policy behaviour. Although the interdependence may facilitate collaborations, it may also result in asymmetrical relationships in which one state end up being more dependent on the other, which creates strategic leverage(Oatley,2019).[17]When applied to the India-Russia energy relations, the theory assists in understanding how long-term accords strengthen the cooperation but can also impair the strategic freedom, particularly in the circumstances of sanctions, payments limitations, and the change of geopolitical orientation. Combined, these theories give a holistic approach in the analysis of the security motivations as well as the strategic risks involved in long-term bilateral energy agreements(Kroll,1993).[18]

Methodology

The qualitative and analytical research method of the Study will be to investigate the risks and indirect costs of long-term energy contracts between Russia and India. The research rather than using primary surveys or quantitative modelling applies to the interpretative examination of the current data, policy developments, and strategic patterns. The method will enable a further insight into the economic, political, and supply-side aspects of bilateral cooperation on energy issues. The primary sources used by the study are the secondary ones comprising of government policy documents, the official trade statistics, the international energy reports, academic literature, and statements by the energy institutions. These documents offer trustworthy and verifiable data on oil imports, nuclear cooperation deals, trends on prices and geopolitical events that influence the Indian-Russia energy relations. The use of comparative and trend-based analysis will help to trace the change in trade patterns, pricing structures and strategic alignments over the period, specifically pre and post the occurrence of major geopolitical shifts like the sanctions on Russia. This aids in recognizing the dependence, diversification and financial implication schemes in the long-term contracts. The study is also based on the case study approach and targets two major areas such as oil trade arrangement and civil nuclear cooperation. The study identifies the economic and strategic significance of long-term contracts in both industries by using the example of distinct agreements, supply patterns, and project developments. The case-based approach allows conducting a more thorough evaluation of the undocumented costs and the sustainability issues in the context of the India-Russia energy cooperation

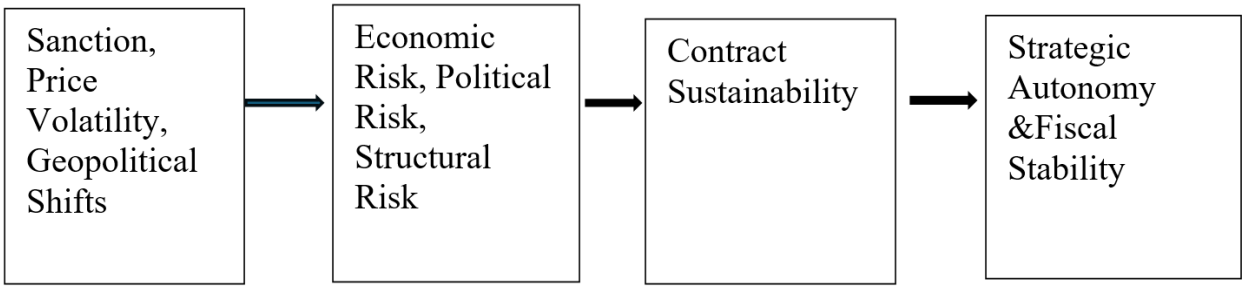

Figure 1. Integrated Risk Framework for Assessing Sustainability of Long-Term Energy Contracts

Source: *Author's Conceptualization*

Figure 4. is an integrated analytical framework illustrating how sanctions, price volatility, and geopolitical shifts generate economic, political, and structural risks, which collectively influence long-term contract sustainability and strategic autonomy.

RESULTS AND DISCUSSION

The analysis made shows that long term energy contracts between Russia and India lead to various economic, political and structural risks that are achieved in the long-term. Though such agreements are usually directed as energy security measures, and as strategic alliances the discovery shows that they also include the aspect of fiscal risk, technology-dependency and geopolitical sensitivity(Xie,Shang, et.al, 2014). [19]

In economics, it creates long-term liabilities through the use of pricing mechanism that is connected to international standards, currency settlements changes, and investments that are infrastructure specific in nature. Discounted oil imports will have short run fiscal gains but the rigidity of contracts will reduce flexibilities in face of change in the future in the market(Vlaskamp, 2025).[20] There is technology lock-in and fuel supply requirement being applied to the nuclear industry that increases the structural commitment that intensifies the sunk costs and diversification constraint. Fiscal pressure is also put on importing states due to increased cost and slow implementation(Vakulenko, 2026).[21]

A comparative analysis reveals even distribution of risks. The biggest exposure in the case of India is in concentration risk and long-term fiscal commitments. The bargaining power of the producer could be constrained by concentration of bargaining power in the hands of the supplier and balancing with the Western allies could be harder. Adaptation of infrastructure, and contractual inflexibility, may be a handicap in quick diversification to geopolitical shocks(Fattouh, 2011).[22] The concentration of exports and low accessibility to the Western markets are the primary weakness in the case of Russia. Sanctions will lead to reorientation that will stabilize the revenues in the short term, but market flexibility and dependence on fewer and larger consumers would be reduced. Accordingly, both states rely on each other, but the vulnerability of the two differs in respect to magnitude and the scope(Ebrahim et al., 2014).[23]

The other conflict that would be underlain in the study would be the short-term benefits and the long-run structural risks. In the short run, discounted crude supplies, assured fuel system, predictable bilateral arrangements and structures contribute to the continuity of energy and stability of the economy. However, structural lock-in, higher fiscal exposure and geopolitical bondage can counterbalance short-term gains in the long-run. The deeper the contractualization the more difficult and costly the policy recalibration(Stockholm International Peace Research Institute, 1974).[24]

Finally, the consequences of trade-off between energy security and strategic autonomy have also been described in the findings. Energy security requires reliable and inexpensive supply lines and this is usually achieved through long term contracts. Yet being strategically independent is founded on diversification, flexibility and diplomatic equilibrium amongst warring blocks of the world(Gutiérrez Roa, 2026).[25] The dependence on a direction of bilateral energy may de facto restrict the freedom of foreign policy, and may reduce the power to absorb systemic shocks.

Overall, the findings support the paper that long-term oil and nuclear agreements offer good short-term stability and concomitantly cause structural risks that build up. Their sustainability is thereby related to the diversification plans, flexible contract structure, and unremitting geopolitical risk assessment.

Economic Risks in Long-Term Oil and Nuclear Contracts

One of the serious areas of concern is connected with the pricing mechanism and discount structure. Even though temporary relief in the financial strains may be achieved with the help of discounted crude oil supplies, in the long-run contracts may be based on formula prices based on benchmarks, freight expenses and geopolitical premiums (Kessides, 2010).[26] This form of working can render the importer less adaptable in the time of the world-wide prices fall since they bind the importer into the organized price plans that do not always reflect the current market advantages. The long-term nuclear sector fuel supply agreements will also impose the cost structure on purchasing state that will reduce the area to bargain in the long run(Masten & Crocker, 1985).[27]

Currency and payment system complications also increase the economic risk. The

shift in application of the sanctions to desert the old dollar settling bases has driven towards experimenting with the alternative ways of payment(McDowell, 2021).[28] Although these mechanisms are supposed to keep the trade moving, the volatility in exchange rates, settlements lag, and limitations in the financial systems may over and over again increase the transaction costs and give a golden albatross to state owned firms and government owned financial institutions (Wronka, 2022).[29]

Another structural risk is infrastructure and financing commitments. The capital-intensive investments are needed to design oil refining configurations, port facilities, and shipping arrangements depending on the certain grade of crude oil. In nuclear cooperation, sovereign guarantees, extended gestation, and massive initial funding is associated with reactor construction. Such commitments create sunk costs, which limit the flexibility of policy and the possibility of diversifying the energy sources without placing further fiscal pressure on it(International Energy Agency, 2021).[30]

The economic aspect of the cost overruns in nuclear projects is a very sensitive aspect. The world experience in nuclear infrastructure projects has shown the inclination towards delays, increase in construction costs, and changes of safety compliance standards. These overruns can widen the financial burden of the importing states, and in many cases increase the dependency on a long-term credit facility, and augment the debt liabilities of the population(OECD Nuclear Energy Agency, 2020).[31]

Combined, this has a long-term fiscal burden to the importing states. Although this could be short term supply security, overtime repayment periods, infrastructure amortization, and contractual inflexibility can put an everlasting economic pressure. The seeming solidness of long-term oil and nuclear deals therefore conceals more underlying financial weakness that emerge over time especially when situations are volatile in the market and where the geopolitical environment is uncertain.

Political and Strategic Risks in Bilateral Energy Commitments

The energy relations between India and Russia on a long-term basis are not limited to commercial exchange as they go into the realm of strategic alliances. Although these relationships enhance bilateral relationships, they also create political and geopolitical risks that can limit the flexibility of foreign policies of the actors(Chatham House, 2024).[32]

One of the most important issues is strategic reliance on one major supplier. In a case where a large part of the crude imports or nuclear fuel dealings is pegged on a single nation by long-term contracts, the diversification is limited with time(Moghani& Loni, 2025).[33] Although there may be no formal exclusivity, infrastructural adaptation, refinery forms and technological compatibility may indirectly entrench dependence. Such a concentration risk can also restrict the bargaining power and the ability of the importing state to re-calibrate energy sourcing to the global political changes(Dadwal, 2017).[34]

There are also risks of diplomatic pressure and alignment that complicate this landscape even more. Polarization of international system. Energy partnerships can be seen as manifestations of political orientation in an ever-polarized international system. Continued massive imports of Russia at times of sanctions or geopolitical confrontation could put India under the watchful eye of the external powers and make it vulnerable to diplomatic pressure by other power blocs(Balfour et al., 2024).[35] The issue is how to strike the balance between the priorities of energy security and extended strategic autonomy and commitments of multilateral engagement.

It has a major effect on the Indian relations with the Western partners. India continues to have grown economic, military and technology relationships with the United States and European Union. Strengthening of the long-term energy relationships with Russia, particularly in oil and nuclear spheres, can make their bargaining more difficult in such spheres as technology transfers, financial collaboration or climate relationships(Uyanaev, 2022).[36] Formal sanctions may not necessarily work against India but indirect pressures, compliance risk, and reputation can play a role in the policy calculations.

Russia is becoming too dependent on constrained markets, on the other end, which poses mutual susceptibility. The western markets are shrinking as a result of sanctions and political distancing, which increases the dependency on massive buyers like India(Singh, 2023).[37] As much as this enhances bilateral energy interdependence, it

also influences the loss of market diversification of Russia, and increases susceptibility to policy adjustments or shifts in demand among partner states. Concentrated export portfolio can dilute the ability to bargain over the long run and establish asymmetrical strategic sensitivities (Sassi, 2023).[38]

Therefore, bilateral energy engagements, though they are designed as the pillars of strategic engagements, entrench stratified political risks. The greater the integration of the contractual and infrastructural basis, the more difficult is the diplomatic balancing operation of the two nations in a dynamic and disputed geopolitical environment.

Hidden Financial and Structural Costs of Long-Term Agreements

Russia and India energy transactions at extended durations could be economically viable and appear safe in both monetary and measures. However, the structural costs in these contracts in addition to direct pricing and supply promises are slowly diminishing the flexibility of policy and economic efficiency(Gandhi et al., 2022).[39]

The nuclear industry has one of the greatest aspects of technology lock-in. The nuclear cooperation usually involves reactor designs, safeguards, maintenance plants and fuel specifications which are technologically combined with the supply state(S&P Global, 2024).[40] When a given model of reactor is installed, the host nation then makes the commitment to the supplier on the technical upgrading requirement, spares and expertise over decades through the requirement of operational compatibility. Such reliance of technology results in the inability to alter the vendor without significant transition costs, which in effect limits the options with regard to vendor competition in subsequent contracts(Anjum & Islam, 2025).[41]

Very closely linked to this issue is the issue of long-term agreements on fuel provision. Nuclear deals typically entail guaranteed fuel supply contracts that take several decades. Despite the fact that these provisions are meant to ensure continuity of its operations, it also limits the importing state into organized procurement contracts. These commitments may restrict the ability to identify alternative suppliers at better prices, or geopolitical diversification in case the contractual exit requirements are a penalty to the pocket (Goldschmidt, 2010).[42]

The structural dependence is also enhanced by specific infrastructure investment. Oil refineries, which are designed to be able to process some grades of crude, port facilities which are adjusted to suit some shipping routes and long-term storage contracts are capital intensive projects (Morão, 2025).[43] Diversification is a costly affair when a specific supply pattern is optimized on this type of infrastructure. The modifications may include additional capital investment, which enhances the already existing relations with suppliers even in the case of alternative sources (Weldegiorgis, 2023).[44]The impact of such structural commitments is less flexibility in energy diversification that is cumulative. With big financial and technical resources being soaked in a single bilateral line, less space is available to make a quick policy on diversifying. A constraint on sunk costs and the rigidity of the contract to move to new energy sources or suppliers is debilitating when there is uncertainty in the geopolitical environment or when the market is volatile(Oxford Institute for Energy Studies, 2021).[45]

These financial and structural expenses are secreted to indicate that long term contracts though come with stability also generate dependencies. Such arrangements actually produce an effect not only, in the short term, of profitable trade but also in the long-term of the increase of the strategic and economic flexibility.

Impact of Sanctions, Price Volatility, and Geopolitical Shifts

Bilateral calculations are slowly being replaced by external uncertainties to determine the sustainability of long-term energy contract between India and Russia. Sanctions regimes, market instability and geopolitical realignments have introduced the structural volatility that was originally intended to be long term and stable structures into the board(Omokaro et al., 2025).[46] These happenings are a direct threat to the stability of the deal and the third objective of The Study.

The oil flows in the world have changed significantly due to the implication of the Western sanctions on the Russian energy trade. The United States and the European Union among other associated economies have clamped restrictions to the existing export destinations, price standards and payment settlement systems(Jayaprakash, 2025).[47] All these sanctions have rendered Western banking system, shipping insurance markets and technology transfer hard though not every sanction has prohibited energy trade. This has observed a continued shift of Russian energy exports to the

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Asian consumers making the bilateral energy interdependence greater and at the same time, decreased market heterogeneity (Dale, 2015).[48]

Shipping, insurance and payment problems also complicate long term contracts. The international transportation of crude oil is based on the world insurance and reinsurance framework, majority of which are in the jurisdiction sanctions (Scott, 1987).[49] The intermediaries have been exposed to additional transaction surveillance, documentation and reputational risks by compliance requirements and price caps. Restructuring of payment systems has also occurred and going around dollar-denominated payments brought about exchange rate risks and settlement inefficiencies. These logistical and financial crunches raise the cost of transactions and reduce predictability of the long-term contracts (Masten,& Crocker, 1985).[50]

One more disruptive factor is the oil price volatility. Geopolitical tensions, OPEC+ output policies, economic downturns and market speculations negatively affect the global crude prices in the world market. The long-term transactions using the formula of benchmark linked prices may offer certain protection though it does not eliminate the possibility of being affected by the extreme price movement(Mignon & Saadaoui, 2024).[51] When the world markets are severely deflating its prices, predetermined contractual conditions may act as an obstacle on a timely renegotiation. Conversely, in case of price increment, the security of supply can be upheld at the cost of high fiscal cost. This is a mix of the market forces and the inability of contracts to adjust that creates uncertainty in the financial point of view in the long run(Song et al., 2022).[52]

Figure 2.0 illustrates the trend in Brent and Russian Urals crude prices from February 2022 to mid-2026. The widening gap following the imposition of Western sanctions highlights the discount on Urals crude relative to Brent, reflecting market reorientation and sanction-induced pricing pressures. The fluctuations in both benchmarks underscore the impact of global price volatility and reinforce concerns regarding contract rigidity and long-term sustainability(Reuters, 2025)[53]

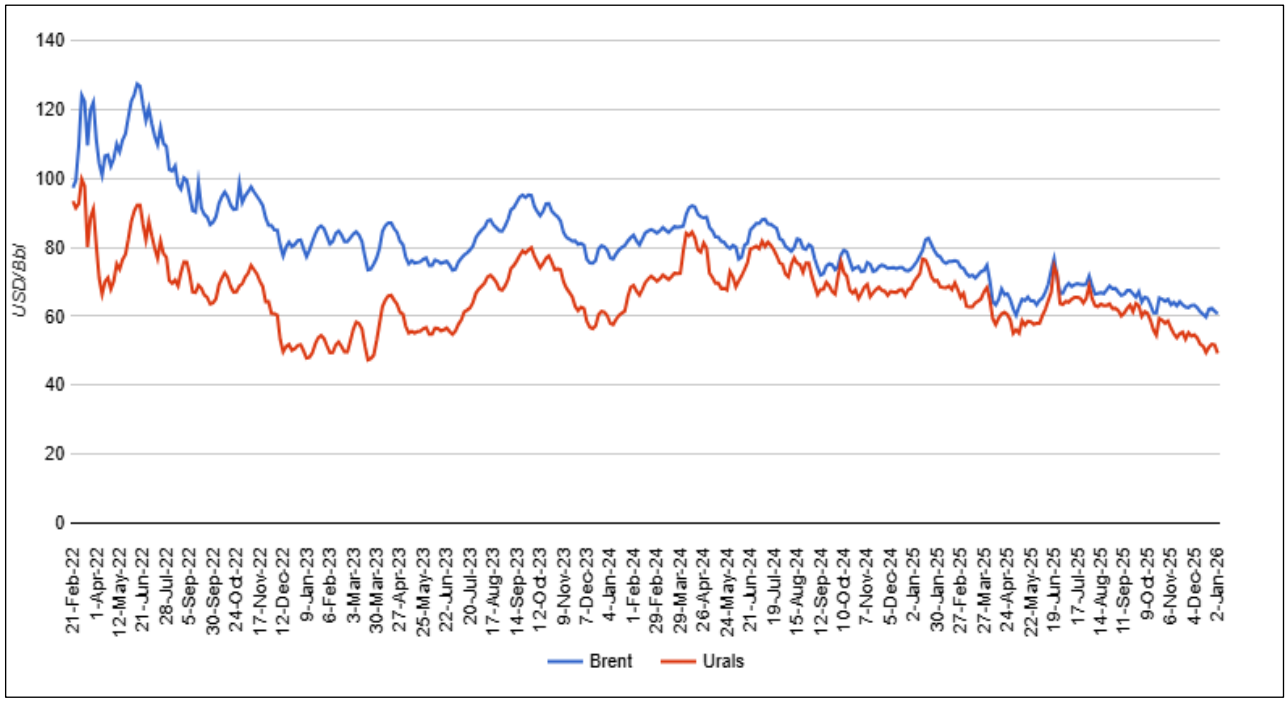

Figure 2.0 Brent vs Urals Price difference

Source: *https://incorrys.com/energy/energy-price-forecast/brent-urals-differential/*

Crude trade is not the only area of supply chain disruptions. Cooperation in energy, especially nuclear sphere requires specific equipment, technological parts, and regulatory authorizations that can be indirectly influenced by sanctions or geopolitical disintegration(Ikevuje et al., 2024).[54] The project implementation can be slowed down and become more expensive because of delays in the component's delivery, compliance standards change, or a limitation of the dual-use technologies.

These destabilizations break the theory that long-term agreements are necessarily stabilizing (Galani, 2022).[55]

These risks are increased by future geopolitical uncertainties. There are also changes towards multipolarity, formation of regional blocs and strategic rivalry among the world powers in the international system(Sinani et al., 2026).[56] The risk environment of energy cooperation may change due to the change of political leadership or alliance formations or intensification of regional conflicts. A contract which was signed in one geopolitical configuration on long-term basis, could be worked under entirely different strategic circumstances in next decades(Bednarski et al., 2025).[57]

Combined, sanctions, price volatility, and geopolitical changes demonstrate that there are no instances of long-term energy contracts outside of the context of global politics economy. Although they are aimed at predictability and security, they are susceptible to systemic shocks and external constraints. Their survival is thus pegged more to bilateral goodwill rather than adaptive flexibility in a more uncertain world order.

Contribution of the Study

The Study has a number of important scholarly and policy-oriented contributions to the literature on the international energy relations, and long-term contractual regulation of the relations between India and Russia.

Firstly, it improves the analytical vision of the long-term energy contracts with the abandonment of the customary energy security discourses. Despite the present-day tendency to focus on the advantages (or absence of these) of trade in the short-run (or the geopolitical orientation), this paper introduces a multi-dimensional model of the risk that takes into consideration economic, political, and structural aspects. The research provides a broad outline of how to identify the sustainability of contracts through the application of using analytical measures of pricing mechanism, infrastructural and commitments, lock-in of technologies and disruption of sanctions.

Second, the analysis contains a conceptual worth in showing how bilateral energy deals are linked to the greater shifts in geopolitics. It demonstrates that oil and nuclear long-term contracts cannot be assessed according to the simple commercial criteria but instead they must be discussed within the framework of the dynamic global political economy of sanctions regimes, financial readjustments and multipolar struggle. This collective paradigm adds to the theoretical speech of the strategic interdependence and inflexibility of the contracts in relation to international relations.

Third, the validity of the study is empirical since it identifies the existence of an unequal exposure to risk in the states of importers and exporters. It shows that the two countries, India and Russia, are not equally affected in terms of stability, as their strengths are dissimilar: India is at threat of concentration and fiscal threats, whereas Russia must be discriminated of the threat of market dependence and sanctions-related constraints. This comparative understanding contributes to the debate of interdependentness and skewed vulnerability in energy relations.

Finally, the integration of economic analysis and superimposition of geopolitical analysis has offered a template framework of analysis, which is applicable to consider other long-term energy alliances within the globe. In so doing, it serves the methodological diversity of the energy policy literature and diversifies the discussion of the long-term effects of the application of long-term contracts in order to advance strategic autonomy against an increasingly volatile international system.

CONCLUSION

The contemporary global energy landscape is increasingly shaped by geopolitical rivalries, economic uncertainties, technological dependencies, and shifting patterns of international cooperation. In this context, long-term energy agreements have emerged as important instruments through which states seek to secure stable access to critical resources while advancing broader strategic objectives. For energy-importing countries such as India, partnerships with major suppliers play a significant role in ensuring energy security, supporting economic growth, and sustaining industrial development. However, the long-term implications of such agreements extend far beyond immediate commercial benefits and require careful examination of their economic, political, and strategic consequences. This study assessed the economic, political, and supply-related risks associated with India's long-term oil and nuclear energy agreements with Russia. The findings reveal that while these agreements provide short-term

advantages through discounted energy supplies, assured fuel availability, and strengthened bilateral cooperation, they also create a range of hidden costs and structural vulnerabilities. Economic risks arise from pricing rigidities, currency settlement challenges, escalating infrastructure expenditures, and exposure to volatile international energy markets. At the structural level, technology dependence, long-term fuel commitments, and substantial investments in specialized infrastructure may reduce policy flexibility and limit alternative energy options in the future. The study further highlights that geopolitical developments significantly influence the sustainability of such agreements. International sanctions, financial restrictions, diplomatic pressures, and changing global power dynamics have increased uncertainty surrounding long-term energy cooperation. These external factors demonstrate that energy contracts cannot be viewed merely as commercial arrangements; rather, they constitute strategic commitments that shape foreign policy choices, economic planning, and national security considerations over extended periods. A critical examination of the findings suggests that the sustainability of long-term energy agreements depends less on their duration and more on their adaptability. Contracts lacking flexibility, diversification mechanisms, and periodic renegotiation provisions may gradually transform energy security into strategic dependence. Excessive reliance on a single supplier increases vulnerability to geopolitical disruptions, market fluctuations, and technological constraints, potentially undermining long-term national interests. Therefore, India's future energy strategy should prioritize diversification of supply sources, greater contractual flexibility, technological self-reliance, and balanced diplomatic engagement. Such measures would enable the country to maintain energy security while preserving strategic autonomy in an increasingly uncertain international environment. The study concludes that although India–Russia energy cooperation remains valuable and potentially sustainable, its long-term success cannot be assumed. The hidden financial burdens, structural dependencies, and geopolitical risks embedded within these agreements require continuous monitoring and proactive policy intervention. Without robust risk-management mechanisms and a forward-looking diversification strategy, long-term energy contracts may evolve from instruments of security into sources of strategic constraint. Sustainable energy partnerships in the twenty-first century must therefore be guided not only by economic pragmatism but also by geopolitical foresight, institutional flexibility, and resilience against emerging global uncertainties.

Data Availability Statement

No datasets were generated, collected, or analysed during the course of this study. Therefore, data sharing is not applicable to this research.

Funding Statement

The authors declare that no financial support, grant, or funding was received from any organization, institution, or agency for conducting this study.

Ethics Approval

This research is based exclusively on secondary sources, publicly accessible documents, and published literature. As the study did not involve human participants, personal data, biological samples, or animal subjects, ethical approval was not required in accordance with institutional and international research ethics guidelines.

Consent to Participate

The study did not involve human participants, interviews, questionnaires, surveys, or any form of personal data collection. Consequently, consent to participate was not required.

Consent for Publication

The manuscript does not contain any individual person's data, images, videos, or other identifiable information. Accordingly, consent for publication is not applicable.

Author Contributions

Urvashi Singh contributed to the conceptualization of the study, review of relevant literature, collection and analysis of data, interpretation of findings, and drafting of the manuscript. Dr. Showkat Ahmad Dar, as the Corresponding Author and Research Supervisor, provided academic supervision, methodological guidance, critical review of the research framework, interpretation of results, and substantial revisions to the manuscript. Both authors contributed to the overall development of the study, reviewed and approved the final version of the manuscript, and accept responsibility for the accuracy, integrity, and scholarly quality of the research

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