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NAVIGATING **INDIA-EU** **COOPERATION**

SECURITY IMPLICATIONS OF ENERGY DEPENDENCIES



DR SHREYA SINHA

VIF BRIEF

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Abstract

The evolving dynamics of global energy security underscore the criticality of strategic cooperation between India and the European Union (EU). India, the largest democracy, and the EU, the largest cluster of democracies, are two major global actors who converge on their inherent values in the international world order, grappling with significant energy dependencies that impact their economic stability, policymaking autonomy, and strategic resilience. India's reliance on imported fossil fuels and its aspirations for renewable energy integration are juxtaposed with the EU's quest to reduce dependence on Russian energy supplies, with both in pursuit of diversifying their energy portfolio. The Russia-Ukraine war and the ongoing Gaza conflict have further exacerbated energy security concerns, challenging both India and the EU to recalibrate their energy strategies. The security implications of energy dependencies in the India-EU relationship can be contextualised in the form of economic instability, supply chain disruptions, and strategic limitations, necessitating robust governance frameworks to mitigate risks.

The first section of the brief examines the energy dependencies of India and the EU along with their security implications. It also explores the synergies in India-EU energy cooperation, particularly

in renewable energy, green technology, and climate action, while evaluating their potential to influence global energy security governance. The second section of the brief analyses the impact of significant geopolitical shifts across the globe on the energy security of the India and the EU while also assessing the challenges in aligning the goals of the two. The concluding third section of the brief delves into policy recommendations for mitigating energy dependency risks and security challenges in the India-EU partnership, offering opportunities to enhance their energy governance and bolster security.

Introduction

With a global energy landscape which is rapidly transforming, the strategic convergence of India and the European Union (EU) on matters of energy security has emerged as a critical dimension of 21st century geopolitics. As two of the most significant democratic actors- India as the world's largest democracy and the EU as the largest cluster of liberal democracies- their cooperation is increasingly defined not only by shared values but by shared vulnerabilities in the domain of energy. At the heart of this cooperation lies a pressing challenge: energy dependency. With both actors relying heavily on external energy sources, especially fossil fuels, the geopolitical, economic, and security risks associated with this dependence have become more pronounced in the wake of ongoing global conflicts and shifting energy market dynamics.

Owing to a rapidly growing economy and increasing population, India's energy demand continues to surge. As predicted, India will account for almost 25% of the global increase in energy demand between 2023 and 2040.¹ With a population that has surpassed 1.43 billion in 2024, energy access and affordability remain pivotal to sustaining economic growth. However, with a majority of the

1 [International Energy Agency \(2024\), Energy System of India.](#)

natural gas, coal, and crude oil needs being met through imports, India remains energy dependent and acutely vulnerable to price fluctuations, geopolitical instability, and supply chain disruptions. In 2024, Russia retained its position as India's top crude oil supplier, contributing over 35% of total imports- a figure that reflects strategic pragmatism but also exposes India to the weaponization of energy by supplier states.

Simultaneously, the EU has also witnessed an accelerated shift in its energy security calculus. The full-scale Russian invasion of Ukraine in 2022 proved to be a watershed moment, compelling the EU to drastically reduce its reliance on Russian gas. By the end of 2024, Russian gas imports had declined by over 80% from pre-war levels.² The REPowerEU Plan, introduced in 2022 and reinforced in 2024, intensifies investments in renewable energy, green hydrogen, and energy efficiency. In addition, LNG imports from the United States, Norway, and Qatar now play a significant role in the EU's diversification strategy, yet they introduce new dependencies on volatile global markets. Further, the conflict in the Middle East has further complicated maritime energy routes in the Eastern Mediterranean and Red Sea, affecting Europe-bound oil tankers and raising insurance costs and logistical uncertainties.

These developments highlight a central tension in energy security: how to ensure reliable access to energy while navigating the constraints of external dependencies and internal policy ambitions. The implications are far-reaching. Energy dependency weakens

2 [Oxford Analytica \(2025\), Russian Gas Sales to the EU will Struggle to Rebound, April 1.](#)

economic stability, limits foreign policy autonomy, and increases exposure to coercive tactics by supplier countries. As both India and the EU deepen their commitments to climate action, the interplay between energy transition and energy security becomes more intricate. Renewable energy expansion is vital, but it also brings its own challenges, such as critical mineral dependencies. India's solar and wind energy sectors, for instance, are heavily reliant on imported components, particularly from China. Similarly, the EU's battery storage and electric vehicle industries depend on rare earths and lithium, much of which is sourced from geopolitically sensitive regions, with China continuing to dominate in the mining and refining of rare earth elements.

Despite these challenges, there are strong complementarities in India-EU energy cooperation. The India-EU Clean Energy and Climate Partnership, formalized in 2016 and renewed in 2023, reflects a shared commitment to low-carbon technologies, green hydrogen development, and energy efficiency³. In addition, the EU-India Green Hydrogen Alliance of 2024 has identified joint pilot projects, technology transfers, and regulatory alignment as areas of action.⁴ Moreover, the India-EU Connectivity Partnership offers a platform to jointly invest in resilient energy infrastructure across the Indo-Pacific.⁵ Both actors also stand to benefit from coordination in global energy governance, particularly in multilateral forums

3 [European Commission \(2024\), EU-India Clean Energy and Climate Partnership.](#)

4 [MEA, India \(2024\), 10th Meeting of the India-EU Energy Panel and 3rd Phase of the Clean Energy and Climate Partnership, November 22.](#)

5 [MEA, India \(2021\), India-EU Connectivity Partnership, May 8.](#)

such as the International Solar Alliance (ISA), the G20, and the International Renewable Energy Agency (IRENA).

Against this backdrop, this brief explores the multifaceted relationship between energy dependencies and security implications in the India-EU context. The first section maps the specific contours of energy dependency in India and the EU, highlighting how these dependencies manifest in economic, political, and strategic domains. It also examines emerging synergies in energy cooperation, particularly in renewables, grid connectivity, and technology partnerships. The second section delves into how recent global geopolitical developments- including the Russia-Ukraine war, the Gaza crisis, and increasing tensions in the Indo-Pacific- have impacted the energy calculus of both India and the EU. Finally, the third section offers forward-looking policy recommendations to mitigate energy security risks and enhance cooperative resilience. These include diversification strategies, institutional frameworks for crisis response, and investments in sustainable and indigenous energy systems.

In an era where energy is not just a commodity but a geopolitical instrument, navigating the interlinkages between security and sustainability is vital. For India and the EU, a robust energy partnership offers the potential not only to enhance their mutual energy resilience but also to shape global norms on responsible energy governance in an increasingly fragmented world. As both regions confront the dual challenges of securing energy supplies and advancing decarbonization, their collaboration can serve as a model for integrating energy security with environmental stewardship.

This partnership is not merely a strategic imperative but a normative endeavour, aiming to redefine energy as a cornerstone of strategic autonomy and global leadership. By aligning their strengths in innovation, infrastructure, and governance, India and the EU can set a global benchmark for how democracies can lead the green transition. Together, they can transform energy from a geopolitical vulnerability into a cornerstone of shared prosperity and strategic influence.

Mapping the Energy Dependency-Security Nexus

Owing to the increasing global population, growing demand continues to put pressure on an already strained global energy supply system. This not only leads to high prices but also adds an additional stress to the global anxiety over the world's abilities to meet energy demands across countries. The concentration of resources at certain geographic locations in the world often leads to high reliance on these regions, and subsequent exposure to price volatility and geopolitical risks amid energy dependencies. For instance, the concentration of much of the world's hydrocarbons in the Middle East becomes a contributing factor to the economic instability through supply-chain disruptions and security challenges confronting the world at large. Similarly, Russia's use of the "energy weapon" in Europe refers to the strategy of using its substantial energy resources, primarily oil and natural gas, as a tool for political and economic coercion. Through price manipulation, cutting-off of energy exports, or using energy as a condition for political concessions, resource-rich regions often weaponize energy dependencies.

Energy dependency poses significant security challenges with a direct and significant impact on economic stability, policymaking autonomy, and strategic resilience. In addition to increasing energy demands and high prices, energy-political challenges play a big role in defining the energy cooperation of states. Climate change, infrastructure resilience, producer's coercive energy policies and internal market failures of states often leads to securitization of energy policies. In order to enhance a country's energy security, it is imperative to reduce weaponizable dependencies through source diversification.

1. India's Energy Landscape: Dependencies and Strategic Vulnerabilities

As the fastest-growing large economy of the world, India is set to dominate the global economic landscape with a projected steady growth rate of 6.7% in both FY26 and FY27.⁶ Poised to become the world's third largest economy by 2030 and in pursuit to achieve developed country status-Viksit Bharat-by 2047, energy, inevitably plays a central role in India's trajectory of economic growth. Any sustainable economy requires their energy demands to be met in order to support economic and social development, notably in the light of climate change. With the world's largest population becoming a strategic demographic asset for India, the requisite of energy supply demand remains at the forefront. Any future economic growth for India depends heavily on the availability of energy from sources that are affordable, accessible, and environmentally friendly.

India is strongly dependent on fossil fuels for its energy requirements,

⁶ World Bank (2025), *Global Economic Prospects*, January 2025.

contributing significantly to the global greenhouse gas emissions. More than 25% of India's energy requirements are met by crude oil and as India's domestic production cannot meet its demand, India continues to import 80% of its crude oil needs.⁷ With India's objective of achieving a 33-35% reduction in gross domestic product's emission intensity amid achieving long-term energy security, it becomes imperative for India to lessen its dependence on imported oil, gas, and coal, and utilise their indigenous natural energy sources productively and sustainably. India faces significant energy security challenges due to its high import dependence, making it vulnerable to price fluctuations and geopolitical instability. Further, India's transition to cleaner energy sources raises concerns about mineral security, with critical minerals being geographically concentrated in the hands of a few countries.

In 2024–25, India's primary energy import partners remained largely concentrated in geopolitically sensitive regions. Russia emerged as India's largest crude oil supplier for the third consecutive year, accounting for over 35% of total imports, importing over €49 billion worth of Russian oil in the third year of the Ukrainian invasion. Owing to the Western sanctions on Russian oil leading to discounted prices, India's imports of Russian oil saw a dramatic rise, growing from less than 1% of its crude oil imports before the start of the War to a massive 40%, as of February 2025. These strategic imports from Russia offered short term economic relief and alongside, the exports of refined crude to Europe highlighted India's ability to balance relations with the west especially the EU. However, it also brought

7 [International Energy Agency \(2024\), World Energy Investment 2024, India.](#)

into focus a certain dependence on one source. Meanwhile, over 60% of India's liquefied natural gas (LNG) imports originate from Qatar and the UAE, while coal imports are heavily reliant on Australia and Indonesia. This geographical concentration of energy sources leaves India exposed to regional instabilities, shipping chokepoints like the Strait of Hormuz in the Persian Gulf, and diplomatic fluctuations in West Asia.

Beyond fossil fuel imports, another dimension of India's energy vulnerability stems from its deep dependence on China for renewable energy technologies and critical minerals. Nearly 80% of India's solar module imports and a significant share of battery storage components are sourced from China.⁸ Moreover, the bulk of global processing of rare earths and lithium which is critical for electric vehicles and grid-scale storage is also controlled by Chinese firms. This undermines India's strategic autonomy in its energy transition, raising the issue of technology lock-ins and supply chain disruptions in the event complex border tensions, such as those seen along the Line of Actual Control.

Figure 1 illustrates India's strategic energy dependencies as of 2025, highlighting the country's heavy reliance on Russia for crude oil, West Asia for LNG, Australia and Indonesia for coal, and China for renewable energy technologies and critical mineral supply chains.

8 MNRE, India (2024), [Approved Models and Manufacturers of Solar Photovoltaic Modules](#), October 28.

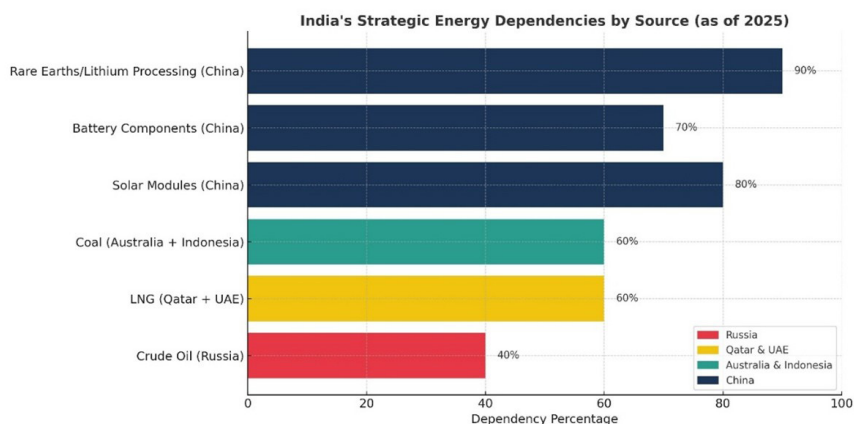


Fig. 1: India's Strategic Dependencies by Source

As a result, the cumulative effect of these dependencies is multifaceted. It not only leads to energy price volatility and heightened exposure to foreign policy shifts, but also offers limited resilience in the face of international crises. India needs a robust diversification strategy in order to realise its ambition of becoming an energy-secure and climate-resilient economy amid security challenges.

2. The European Union's Energy Calculus: Diversification and Strategic Risk

The EU is the world's third-largest economy and it finds itself at a critical juncture in terms of its energy security trajectory. Although EU's climate targets legally commit Member States to reduce greenhouse gas emissions by 55% by 2030 and reach climate neutrality by 2050, the energy transition has been met with high prices and supply insecurity. As the Russia-Ukraine War enters its fourth year, Europe continues to grapple with the aftershocks of the invasion, exposing the fragility of its heavy reliance on external energy suppliers, most notably Russia. The war has triggered an abrupt

cut-off of Russian supply of oil and gas to the Union, exemplifying the geopolitical challenges of ensuring energy security. Despite accelerated diversification efforts, structural vulnerabilities persist within the EU's energy matrix, which are shaped by geopolitical dependencies, fragmented national policies, and the complexity of its energy transition ambitions under the European Green Deal, a policy proposal under the European Commission aiming at making the EU climate neutral by 2050.

Russia has demonstrated a clear mechanism of weaponization of energy through the Nord Stream pipeline disruption and gas flow reductions. Further, technology enabled energy warfare has also been highlighted with the Russian possession of the digital remote-controlled command system, allowing precise and timely disruption of supplies to the EU. This has further catapulted the issue of energy security to the top of the EU's strategic agenda. Although Russian gas imports to the EU plummeted by over 80% by the end of 2024,⁹ the short-term scramble for alternatives revealed the bloc's deep-rooted dependencies on a small cluster of supplier nations. Alternatively, the EU has increased its LNG imports from the United States, Qatar, and Algeria. However, this shift creates new vulnerabilities for Europe- ranging from higher prices in global LNG markets, infrastructural bottlenecks in European regasification capacity, to growing competition with Asian economies for energy contracts.

Furthermore, a significant portion of the EU's fossil fuel and renewable energy technologies are also imported. For instance, while solar and wind installations have risen across the EU, nearly 75% of

9 [Eurostat \(2025\), EU Trade with Russia-Latest Developments.](#)

solar panels used are manufactured in China.¹⁰ The bloc also faces a growing challenge in securing critical raw materials like lithium, cobalt, and rare earth elements, which are predominantly used in clean energy technologies and electric mobility. As a result, the EU relies heavily on China, providing 100% of EU's share of heavy rare earth elements.¹¹ Although the European Critical Raw Materials Act of 2023 provided a stepping stone towards sourcing and recycling strategic mineral within Europe, however, supply chain reliance on certain players, especially China, remains a central concern.

As the continent deals with declining economies, the EU's energy landscape is further complicated by internal fragmentation. While major economies of the bloc, Germany and France have taken major steps to reduce fossil fuel imports and invest in renewables, countries in Central and Eastern Europe like Hungary, Slovakia, and Bulgaria continue to rely heavily on Russian oil and gas due to infrastructural and historical dependencies. Hungary, for example, still sources over 50% of its gas needs from Russia. Such a divergence in energy reliance has caused political tensions within the bloc, posing a challenge to the coherence of the EU's unified external energy policy.

Figure 2 presents the EU's key energy dependencies and diversification challenges in 2025, including reduced but significant reliance on Russian gas, growing LNG imports from alternative suppliers, and continued dependence on China for solar technology and critical minerals, highlighting the bloc's external vulnerabilities.

10 Eurostat (2025), *Shedding Light on Energy in Europe- 2025 Edition*.

11 European Commission (2025), *Critical Raw Materials*.

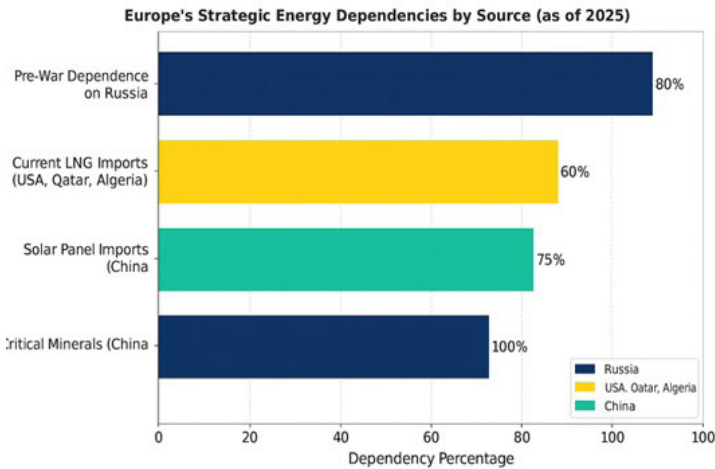


Fig. 2: EU's Strategic Dependencies by Source

In sum, the EU finds itself navigating a precarious energy crossroads. While taking decisive steps to diversify energy sources and accelerate the clean energy transition, these efforts remain undermined by ever-evolving geopolitical risks, internal fragmentations, and overdependence on external suppliers for both fossil fuels and green technologies. As the EU is at a stage of redefining its strategic autonomy, energy security is no longer a sectoral issue, but has become a cornerstone of its global standing and resilience in a geopolitically evolving world.

Geopolitical Shifts and their Impact on Energy Security

In an increasingly multipolar world, energy security can no longer be limited to ensuring steady supply of resources and affordable pricing. It has emerged as a multidimensional challenge deeply shaped by geopolitical developments and evolving strategic rivalries. As observed, for both India and EU, energy dependencies have become a focal point of national and regional security calculations,

particularly in the context of three major geopolitical developments: the Russia-Ukraine War, the Gaza conflict, and strategic reliance on China for critical technologies and raw materials amid the unprecedented rise of China in Asia. These crises are interlinked and they have magnified the vulnerabilities of energy importers, revealing common threads in the India-EU security landscape.

(A) The Russia-Ukraine War: Reorienting Energy Policy

The Russian intervention in Eastern Crimea and Ukraine in 2014 created stresses in the energy security of the EU, however, it was the Russian full-scale invasion of Ukraine in February 2022 which marked a watershed moment for global energy security. For the EU, the war triggered an unprecedented disruption of its energy supply chains. Before the invasion, Russia supplied nearly 40% of the EU's natural gas and about 25% of its crude oil.¹² The conflict led to the abrupt reduction of Russian supplies, creating a sudden vacuum exposing the Union's overdependence on a single supplier and compelled a frantic pivot toward alternative sources, such as increased LNG imports from the U.S., Qatar, and Algeria.

However, this diversification is not easy and comes at a cost. The EU found itself locked in competition with other large importers, especially in Asia, driving up global prices. Simultaneously, the infrastructural constraints in regasification terminals and storage capacities have brought to the forefront Europe's unpreparedness for such a shock. The Nord Stream sabotage and digital manipulation of supply flows further emphasizes how energy infrastructure has become a theatre of hybrid warfare, compromising Ukrainian and

¹² Eurostat (2025), *Shedding Light on Energy in Europe- 2025 Edition*.

European security. Further, with the EU continuing to import large quantities of LNG from Russia, there has been wide criticism not only on Europe's dependency on Moscow, but the fact that EU funds, which are spent more on Russian oil and gas than aid to Ukraine, continue to fund the war for Russia.

For India, the Ukraine war presented a more complex and distant calculus. While most Western nations have imposed sanctions on Russian energy, India, fuelled by its stance of diplomatic neutrality towards Russia, opted to expand its energy partnership with Moscow. Russian oil, which accounted for less than 1% of India's imports pre-war, soared to over 40% by early 2023, primarily due to steep discounts offered amid Western disengagement. This not only highlighted to the world India's pragmatic energy strategy but also revealed the risks of deepening dependency on a geopolitically isolated supplier. Balancing relations with the EU and the US while being a major buyer of sanctioned Russian oil has added to India's diplomatic tightrope, even as India managed to preserve its manoeuvrability in international forums.

(B) The Gaza Conflict: Strategic Risk Exposure

The outbreak of the Gaza conflict in October 2023 further strained the global energy security environment. West Asia remains a vital energy artery for both India and the EU, through oil supplies from Gulf nations as well as through critical maritime chokepoints like the Strait of Hormuz and the Suez Canal. Any escalation in this region poses immediate risks to global oil and gas flows. For instance, Houthi threats to Red Sea shipping routes in response to the conflict have caused disruptions in maritime energy transit and

led to temporary price spikes in global oil markets in early 2024.¹³ The EU, already battling supply disruptions due to the Ukraine war, has faced additional risks from its dependencies on Gulf countries, especially Qatar and Saudi Arabia. Europe's simultaneous moral and diplomatic alignment with the U.S. and Israel has further complicated its energy equation in a region where perception plays a critical role in market access and long-term contracts.

India, on the other hand, has strong energy and diaspora linkages with the Gulf. Over 60% of India's LNG is sourced from Qatar and the UAE while millions of Indian workers in the region also indirectly tie domestic remittances to regional stability. The flare-up in Gaza thus raised concerns not only over supply security but also over India's long-term positioning with respect to shifting West Asian alignments. Any regional escalation could easily jeopardize shipping routes, complicate procurement processes, and inflate prices, affecting India's economic stability at large.

(C) The China Factor: Dependencies and Technology Lock-ins

The unprecedented rise of China with a vision of global domination represents another critical point in the India-EU energy security matrix, but in a more structural and long-term manner. As both India and the EU seek to transition toward clean energy, with India's commitment to increase non-fossil fuel energy capacity to 500GW by 2030, and the EU aiming for a renewables target of 45% by 2030, their overreliance on Chinese technologies and critical raw

¹³ [International Energy Agency \(2024\), World Energy Investment 2024, India.](#)

materials has emerged as a central vulnerability. The EU continues to import around 75% of its solar panels from China and is entirely dependent on China for certain heavy rare earth elements used in electric vehicles and wind turbines. This is in sharp contrast with the EU's recognition of China as a systemic rival¹⁴ and the security risk that China poses to the Union on account of the China-Russia alignment.

India faces a greater challenge when it comes to the China factor, as the tensions between India and China in an increasingly multipolar world cannot be ignored. The increasing security tensions on the Indo-Chinese border, prominent since the start of the post-colonial era, impact the possibilities of cooperation in several areas between the two actors. Today, nearly 80% of its solar module imports and a significant proportion of battery storage components are sourced from China.¹⁵ Additionally, China dominates the global processing of rare earths and lithium, raising concerns for India's transition plans which include ambitious targets for electric mobility and grid-scale storage. These dependencies not only constrain policy autonomy but also make India susceptible to coercive supply chain disruptions, especially in times of political or military tension.

In essence, the overlapping geopolitical flashpoints have exposed both India and the EU to a number of energy-related security challenges, through coercion, disruption, or competition. An analysis of the respective dependencies and their security implications brings

14 [European Commission \(2019\), EU-China- A Strategic Outlook.](#)

15 [MNRE, India \(2024\), Approved Models and Manufacturers of Solar Photovoltaic Modules, October 28.](#)

attention to the realization that energy security cannot be viewed in isolation, without the impact of evolving geopolitical undercurrents. These shared vulnerabilities provide an opportunity for deeper India-EU cooperation in strategic diversification and collaboration in developing indigenous technologies and supply chains.

India-EU Strategic Alignment: Challenges and Prospects in Energy Cooperation

Although strategic partners since 2004, energy cooperation constitutes a pivotal domain within the broader partnership between India and the EU, particularly in the wake of heightened geopolitical risks and the global drive toward a green transition. As both actors navigate a complex landscape of energy dependency, climate imperatives, and geoeconomic recalibration, their strategic alignment on energy-related issues is tempered by structural symmetries and convergences on key issues.

Both actors share a growing interest in diversifying their energy sources, securing resilient energy supply chains, and transitioning to clean energy. This convergence has gained momentum since the reinvigoration of bilateral ties through the India-EU Strategic Partnership: A Roadmap to 2025 and the EU-India Clean Energy and Climate Partnership (CECP) launched in 2016. The CECP specifically targets joint research and innovation, energy efficiency, and renewable energy cooperation, with a focus on solar and offshore wind technologies, smart grids, and sustainable finance.¹⁶

¹⁶ European Commission (2016). *EU-India Strategic Partnership- A Roadmap to 2025*._—

Further, the EU's Green Deal and India's Nationally Determined Contributions (NDCs) under the Paris Agreement underline the centrality of decarbonisation. Moreover, the EU-India Green Hydrogen Partnership announced in 2021 marks a notable step toward collaboration in a nascent but strategically significant energy domain.¹⁷ As the EU seeks alternatives to Russian gas and critical minerals sourced from China, India emerges as a key partner in developing diversified and democratically aligned supply chains. India views the EU as a reliable partner for technology transfer, capacity building, and sustainable infrastructure development. As exemplified in the India-EU Connectivity Partnership of 2021, energy infrastructure has to be integrated with the broader goals of physical and digital connectivity, providing a framework to mainstream energy cooperation into strategic regional corridors.¹⁸

Despite these convergences, the strategic alignment between India and EU on the energy front is confronted with a number of **challenges**:

- (i) The most prominent among them is the absence of a comprehensive bilateral trade and investment agreement. The long-stalled **India-EU Free Trade Agreement (FTA)** negotiations have hindered the institutionalisation of energy trade, investment flows, and regulatory coherence. The resumption of the India-EU FTA with a commitment to conclude an agreement by

17 EEAS (2021), *Global Gateway and the EU-India Connectivity Partnership*.

18 MEA, India (2021), *India-EU Connectivity Partnership*, May 8.

the end of this year provides an important opportunity to address tariffs, standards, and intellectual property rights, in order to ensure meaningful cooperation in sectors such as solar photovoltaics, battery technology, and green hydrogen between the two actors.

- (ii) **Normative divergences** persist regarding energy governance and climate responsibility. The EU's approach is anchored in stringent regulatory norms, carbon pricing mechanisms, and legally binding emission reduction targets. India, while committed to climate mitigation, advocates a developmentalist approach that prioritises equitable access to energy and the principle of common but differentiated responsibilities. This mismatch in normative orientations often results in differing expectations regarding sustainability benchmarks and technology standards.
- (iii) The **asymmetry in financial and technological capabilities** also constraints joint project implementation. While the EU offers advanced green technologies and climate finance mechanisms through the European Investment Bank (EIB), India's energy infrastructure development is often dependent on concessional financing and technology transfer from external actors.
- (iv) The EU's evolving **Carbon Border Adjustment Mechanism (CBAM)**, or carbon tax, all set to come into effect from January 2026, presents a significant challenge to the carbon-intensive exports from India. New Delhi has perceived this as a potential non-tariff barrier inconsistent with climate justice and the principles

of a fair energy transition. The recent visit of the EU Commission President to New Delhi in February 2025 was a promising development in the Union agreeing to address CBAM concerns for India's MSMEs.

- (v) **Geopolitical considerations** also complicate this alignment. India's pragmatic strategic autonomy, manifested in its continued engagement with Russia and calibrated approach to China, does not always align with the EU's foreign policy, wherein Russia is the fountainhead of aggression and coercion.

However, despite these frictions, several areas offer fertile ground for pragmatic engagement. The EU's Global Gateway strategy and India's Gati Shakti Master Plan both prioritise infrastructure and connectivity with a green transition component. Further, the India-Middle East-Europe Economic Corridor (IMEC), announced during the G20 Summit in 2023, represents a new vector for strategic coordination, linking energy corridors, digital infrastructure, and hydrogen trade routes in the India-EU energy partnership. Additionally, India and the EU are also engaging in aligning standards in key future sectors such as green hydrogen certification, battery recycling, and carbon accounting, with an aim to reduce future friction and enable interoperability, a critical condition for scaling up cross-border energy trade.

The Mission Innovation initiative, International Solar Alliance (ISA), and Coalition for Disaster Resilient Infrastructure (CDRI) also offer multilateral platforms where India and the EU can coordinate their normative agendas. These platforms enable India to amplify its role as a norm entrepreneur in the Global South while

allowing the EU to globalise its climate leadership narrative.

While India and the EU face structural and normative challenges in aligning their energy strategies, the landscape of global energy transition presents considerable opportunities for forward-looking cooperation. Building on existing frameworks such as the Clean Energy and Climate Partnership and the Green Hydrogen Partnership, both actors have the potential to advance a mutually beneficial agenda that addresses shared priorities of sustainability, resilience, and strategic autonomy. The following **prospects** outline areas where collaboration can be meaningfully deepened to realise the full potential of the India-EU energy partnership:

- (a) **Enhanced Renewable Energy Collaboration:** There is significant scope for expanding joint initiatives in solar, offshore wind, and smart grid technologies, capitalising on the EU's technological advancements and India's market potential to accelerate the green transition.
- (b) **Operationalising the Green Hydrogen Partnership:** The EU-India Green Hydrogen Partnership can be strengthened through co-development of pilot projects, investments in hydrogen infrastructure, and convergence on certification standards to facilitate future trade.
- (c) **Strategic Cooperation on Critical Minerals:** Joint exploration and investment in critical raw materials, particularly in third regions such as Central Asia and Africa, can diversify supply chains and reduce dependency on geopolitically sensitive sources.
- (d) **Scaling Climate Finance and Technology Transfer:** Greater mobilisation of EU climate finance instruments, including the European Investment Bank, alongside structured technology transfer frameworks, can support India's clean energy infrastructure development.

- (e) **Harmonisation of Standards and Regulations:** Aligning standards on hydrogen certification, carbon accounting, and battery recycling will be critical for ensuring interoperability and enabling seamless cross-border energy trade.
- (f) **Integration through Green Connectivity Corridors:** Synergies between the EU's Global Gateway and India's Gati Shakti and IMEC initiatives can advance sustainable and resilient energy corridors, combining infrastructure, digital connectivity, and low-carbon energy flows.
- (g) **Strengthening Research, Innovation, and Private Sector Engagement:** Enhanced cooperation in research and innovation, coupled with incentivising private sector participation, can facilitate joint development of cutting-edge energy solutions and foster long-term institutional linkages.

Realising these opportunities will require sustained political will, greater regulatory coherence, and mechanisms to de-risk investment and technology sharing. A future-oriented India-EU energy partnership must be anchored in principles of mutual trust, equitable transition, and long-term strategic convergence. This cooperation has the potential to become the cornerstone of the broader India-EU strategic alignment in an increasingly fragmented global energy order. As the India-EU energy partnership is at a formative yet consequential stage, realising the potential for India-EU collaboration on energy security will require both actors to bridge their structural asymmetries, reconcile normative differences, and institutionalise long-term mechanisms for cooperation.

Conclusion

The evolving energy cooperation between India and EU reflects a broader recalibration of strategic priorities shaped by geopolitical flux and shared vulnerabilities in a fragmented global order. As this paper has outlined, the nexus between energy dependency and security forms a critical axis of engagement in India-EU relations, touching upon national development agendas, foreign policy recalibrations, and multilateral commitments to climate action.

Despite the historical depth of their strategic partnership since 2004, energy cooperation has emerged as a distinct vector of collaboration only in the wake of recent geopolitical disruptions, such as the Russia-Ukraine war, disruptions in global supply chains, and a mounting climate emergency. The mutual desire to reduce over-reliance on fossil fuels and foster resilient, democratic supply chains provides an opportunity for deepening this partnership. Initiatives such as the Clean Energy and Climate Partnership (CECP), the Green Hydrogen Partnership, and joint commitments to sustainable infrastructure reflect this strategic shift. The integration of energy goals with broader initiatives like the India-EU Connectivity Partnership and the Global Gateway strategy underlines a growing coherence in their regional and global visions.

As both actors engage with future-facing domains such as hydrogen certification, smart grids, battery innovation, and carbon accounting, the imperative of interoperability becomes central. A rules-based framework that aligns standards, supports small and medium enterprises, and ensures equitable access to technology and finance is critical for scaling up green transitions in both regions. Moreover, leveraging multilateral platforms like ISA, CDRI, and Mission Innovation can help globalise this bilateral momentum. It is important for both actors to move beyond the asymmetries that act as structural barriers and strategic gaps and bridge them through political will and sustainable collaboration.

Looking ahead, it is the need of the hour for India and the EU to shift from tactical cooperation to strategic consolidation, in order to enable a more secure architecture in the energy domain. This requires not just policy alignment but a shared normative imagination, that recognises energy not merely as a sectoral concern, but as a strategic enabler of autonomy, resilience, security, and global leadership. In this context, the energy partnership has the potential to become a defining pillar of a broader India-EU cooperation for a sustainable and secure international order. By aligning their strengths in innovation, infrastructure, and governance, India and the EU can set a global benchmark for how democracies can lead the green transition. Together, they can transform energy from a geopolitical vulnerability into a cornerstone of shared prosperity and strategic influence

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