

Editor's Note

West Asia Crisis and India's Quest for Energy Security

Following the attack on Iran by the US and Israel in late February 2026, the energy supplies through the Strait of Hormuz were severely disrupted. While Tehran decided to effectively block one of the world's most critical energy chokepoints, the US imposed a strict naval blockade on ships entering and exiting Iranian ports and coastal areas.

The almost complete shutdown of the Strait of Hormuz was a wake-up call for India, which relied on this single maritime chokepoint for the bulk of its hydrocarbon imports (nearly 45 percent of crude oil, 90 percent of Liquefied Petroleum Gas and 60 percent of Liquefied Natural Gas). For India, the crude oil prices rose to over USD 120 per barrel from USD 70 per barrel within the first four weeks of the closure. Nevertheless, India managed to successfully navigate the crisis by ensuring uninterrupted availability of petrol, diesel and LPG for consumers. Energy diplomacy also played a crucial role in mitigating heavy dependence on Gulf supplies and addressing supply chain bottlenecks. Indian refineries adapted quickly by increasing supplies from Russia, the US, West Africa and South America. Crude is currently sourced from 41 countries as against 27 in 2024.

India's post-Hormuz energy strategy, therefore, will focus on what can be called 'dual diversification'. Internally, production and supplies will be diversified from multiple sources so as to raise production and reduce dependence on imports. Externally, the diversification will source supplies from several more countries and regions than what is currently in place — to avoid a future blockade.

Rising Demand

India's total energy demand is expected to grow at 3-6 percent annually through 2035. Driven by rapid industrialisation, expanding transportation, huge cooling needs, growing demand from AI Data Centres, and urbanisation, peak electricity demand alone is projected to touch 277 Gigawatt (GW) in the next few years and rise to 459 Gigawatt (GW) by 2035-36, according to the Central Electricity Authority.

To meet this rapidly growing requirement the nation's energy mix is undergoing a massive transformation. This involves wide diversification of sources — thermal,

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renewables, oil and natural gas, hydropower, nuclear energy, biofuel, and hydrogen and large scale investments. The country requires an estimated USD 700 billion in power sector investments alone over the next 10 years, according to Moody's. Expenditure on total oil and gas imports is estimated to range between a staggering USD 1.3 trillion to USD 1.5 trillion over the next ten years.

Search for Energy Independence

The West Asia crisis was a grim reminder for India to aggressively pursue its energy independence. Geopolitical tensions, supply disruptions and fuel price volatility have been recognised as major concerns for India. The crisis prompted re-examination of India's entire energy ecosystem. The country is in the process of diversifying its energy mix through renewables, nuclear power, biofuels, green hydrogen and alternative fuels such as methanol.

Higher ethanol blending, to a substantial degree, saves spending on crude imports every year. India crossed a major milestone in 2025 by achieving the target of 20 percent ethanol blending (E20), five years ahead of the schedule. The government is now assessing whether it can achieve the target of 30 percent ethanol blending by 2030 for modified vehicles.

India has undertaken a number of economic and legislative reforms like the Sustainable Harnessing and Advancement of Nuclear Energy for Transforming India (SHANTI) Act, 2025, which not only consolidates all existing nuclear power legislation, but also allows private participation in nuclear power generation.

Simultaneously, India has also been expanding its refining capacity and has become the fourth largest refining state in the world. This achievement should be viewed in the context of decline in refining capacity in other parts of the world. In the US not even a single new refinery has been built over the last 50 years, while Europe's refining capacity has been gradually declining. Inauguration of the HPCL Rajasthan Refinery's greenfield refinery-cum-petrochemical complex on July 5, 2026 added to India's refining capacity.

India's energy security entails sustainability, self-reliance as well as decarbonisation. It is well known that energy security would play a pivotal role in realising the goal of a developed country (Viksit Bharat) by 2047. India has also committed to achieving Net Zero Carbon Emissions by 2070. There is now a greater urgency to harness the country's abundant natural resources, including wind, solar and green hydrogen. The National Green Hydrogen Mission has set an ambitious target of generating 5 Million Metric Tonnes (MMT) of green hydrogen annually by 2030. India has also committed to attain 50 percent of installed power generation capacity through non-fossil fuel sources by 2030. The

country has forged international partnerships like the Indo-French International Solar Alliance (ISA), which has emerged as a key platform with membership exceeding 100. One of the stated objectives of ISA is installation of 1,000 GW of solar energy capacity globally.

Notwithstanding India's aspiration to diversify its energy mix, coal remains a key energy source for the country. Coal currently provides the most reliable, affordable and abundant means of supplying energy to the grid and industrial supply chains. Clean coal technologies and Carbon Capture, Utilisation and Storage (CCUS) are expected to further support India's energy transition by optimising existing assets and lowering emissions.

Providing affordable power to households, industries and big data centres is not an easy task. India's energy security requires an integrated approach that covers all aspects of generation, supply and consumption. All these efforts would need to be buttressed by enhancing storage infrastructure and a smarter grid. The use of AI would enable better management of supply and demand, and integration of multiple sources of energy through automation and advanced controls.

In this Issue

This issue of the journal contains eight outstanding contributions (six articles and two book reviews) dedicated to different aspects of energy security and India's external relations. It begins with an article by V.K. Saraswat and Tarak Nath Chell, who have highlighted the strategic role of AI-driven technologies in enabling accurate demand forecasting, efficient grid management, predictive maintenance and improved integration of renewable energy sources. They argue that India's pathway to 2047 is contingent on building an intelligent, resilient and sustainable energy ecosystem that aligns economic growth with environmental commitments.

In his article, Vikram K. Malkani provides a holistic view of India's energy transition. He spells out details of key economic and legislative reforms that have a bearing on India's energy security. He has established a clear correlation between per capita energy consumption and per capita Gross Domestic Product (GDP) for several economies that have risen from low-income levels. In order to enter into the 'upper middle income' category, India will need to generate two to four times more energy than it does today. For achieving, this aspiration India needs a progressive policy framework and its effective implementation.

R. Ramachandran in his article examines nuclear power's role in India's energy transition against the backdrop of the country's Net Zero commitment for 2070 and the target of 100 GW nuclear capacity by 2047. His article evaluates the comparative costs of

indigenous reactor designs versus imported technologies from Russia, the US and France. He argues that nuclear power is well positioned to complement renewables and support decarbonisation, and that realising the 2047 target will require sustained policy support, institutional reforms and coordinated action across government and industry.

R. Srikanth focuses on the role of Small Modular Reactors (SMRs) in India's energy transition. In a densely populated country like India, with hundreds of geological disturbances and thousands of seismic events, SMRs can complement conventional Nuclear Power Plants (NPPs) by repurposing brownfield sites, thereby minimising land acquisition for plant, water and grid connections. The author contends that SMRs are ideal for decarbonisation of steel and aluminium plants, besides the repurposing of coal-fired Thermal Power Plants (TPPs).

Two articles in this issue are not energy-specific. They are on India's evolving relations with two of its closest partners — Russia and Brazil. While one of Russia's top India experts Lydia Kulik's article deals with India-Russia relations, another article by Brazilian scholars traces the evolution of geopolitical thinking in Brazil. Lydia Kulik argues that through formats like the BRICS and the Shanghai Cooperation Organisation (SCO), both India and Russia are gradually giving shape to an emerging multipolar world order. Russia is keenly working towards the idea of a Eurasian partnership and security architecture, wherein leading regional powers such as India, Russia and China can play a more decisive role.

On the bilateral front, India and Russia are adapting their cooperation to contemporary geopolitical and geo-economic realities, with economic cooperation at the top of the agenda. The mutually beneficial elements of cooperation will ensure that their bilateral engagement extends far beyond traditional fields such as defence and energy in the coming years. There is huge potential for mutual growth in various fields such as AI, digital technologies, agriculture, pharmaceuticals, industrial supply chains and transportation, Kulik emphasises.

Brazilian experts Wellington Dantas de Amorim and others in their article examine Brazil's practice of geopolitics and the core elements shaping the country's international relations. Drawing on the country's geographical location and historical trajectory, the article seeks to identify and analyse factors that have defined Brazilian geopolitical thought and practice over a period of two centuries following independence. The authors point out that for a long time India-Brazil relationship remained relatively modest. It was only after the end of the Cold War that they found opportunities to coordinate and strengthen their positions on issues such as South-South cooperation, promotion of multilateralism (e.g. BRICS and G20) and reform of the UN Security Council. Bilateral cooperation between the two would remain crucial in future in addressing broader issues related to global governance and climate change.

The current issue carries two reviews of significant recent books. Sanjay Pande and J.R. Bhatt review Ajay Shankar's book, *"Rising Ambition: Carving New Pathways – India's Energy Transition,"* which presents an experience-based account of India's power-sector transformation and a policy pathway towards net-zero emissions. The book argues that India could meet future electricity demand even without new fossil-fuel capacity. This would require a combination of storage, flexible generation and a strengthened transmission network.

The reviewers in their thoughtful critique argue that the book largely treats energy transition as a problem of deploying available technologies—solar, wind, batteries—and assumes that these can be accessed and scaled. In areas such as hydrogen and hard-to-abate sectors, technology is treated almost as an extension of deployment rather than as a capability creation that requires a dedicated industrial and institutional ecosystem. The structural implication of this limitation for India's industrial innovation ecosystem has been overlooked in this book. The review finds that the book makes a substantive contribution by assembling a system-wide account of India's energy transition grounded in institutional experience, policy practice and power sector evolution. It serves as a useful reference point for understanding the evolution of India's climate-energy-technology landscape. The book is of interest to policymakers, practitioners and researchers seeking a broad account of India's energy transition and institutional evolution in the power sector. At the same time, the book's conclusions warrant careful interpretation, particularly where lessons derived from power-sector experience are extended to economy-wide transition prescriptions.

Esha Banerji reviews Dan Wang's book *"Breakneck: China's Quest to Engineer the Future."* The central theme of the book claims that the difference between China and the US cannot be explained through traditional binaries such as authoritarian versus democratic, socialist versus capitalist and East versus West. Wang argues that China is an 'engineering state' oriented towards construction, execution and material transformation, while the US is a 'lawyerly society' oriented towards procedure, adjudication and institutional restraint. Engineers dominate China's political and bureaucratic elite, whereas lawyers dominate America's political and bureaucratic elite. According to Esha Banerji, while Wang's argument held value a decade ago, when 15 of the Politburo's 20 college-educated members had backgrounds in engineering or physical sciences, this is no longer the case. There are just four engineers in the present Politburo. Nevertheless, the book can be seen as a 'stepping stone' for future research.

Prof. Sujit Dutta
Editor, *National Security*