

THE WIDE-ANGLE VIEW

COMPETITIVE ANALYSIS OF INDIA'S GREEN HYDROGEN PRICING: IMPLICATIONS OF L&T's ₹397/kg BID FOR IOCL's PANIPAT PROJECT

Assessing Global Competitiveness, Off-Take Viability, Challenges, and Long-Term Market Impact

WHY THIS ANALYSIS?

- **Focused Scope:** Analyzes a real-world bid (L&T's ₹397/kg) as a case study.
- **Relevance:** Ties India's green hydrogen ambitions to global benchmarks.
- **Actionable Insights:** Covers pricing, policy, risks, and industrial implications.
- **Data-Driven:** Built on validated datasets



H₂

COMPETITIVE ANALYSIS OF INDIA’S GREEN HYDROGEN PRICING: IMPLICATIONS OF L&T’s ₹397/kg BID FOR IOCLs

COMPETITIVE ANALYSIS OF INDIA’S GREEN HYDROGEN PRICING: IMPLICATIONS OF L&T’s ₹397/kg BID FOR IOCLs

May 30, 2025

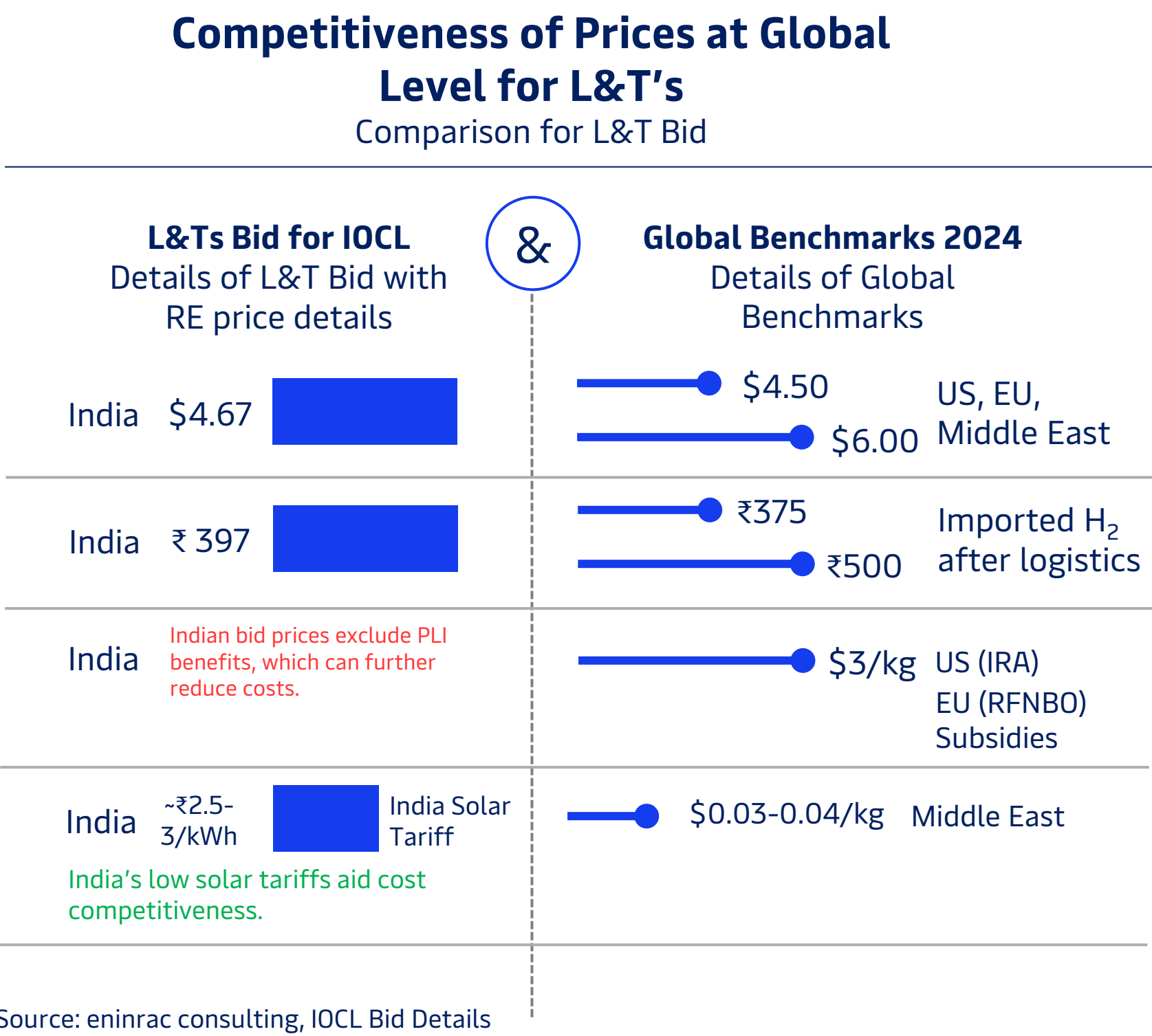
By Ravi Shekhar & Nitika Sharma

Competitiveness of Green Hydrogen Prices: India vs Global Benchmarks

India, led by players like **L&T Energy Green Tech**, is emerging as a competitive hub for **green hydrogen production**. With a **price of \$4.67/kg (₹397/kg)**, L&T’s hydrogen offering is already aligned **with global low-cost producers** such as Saudi Arabia and the UAE, whose prices range **between \$4.50–\$6.00/kg**.

When factoring in **logistics and import costs**, Indian green hydrogen is **cheaper than most EU-imported hydrogen**, which lands at ₹500–600/kg. This cost advantage is further reinforced by **India’s ultra-low solar tariffs (₹2.5–3/kWh)**, among the lowest globally, which significantly reduce the cost of electrolysis-based hydrogen production.

Notably, L&T’s bid prices **exclude government incentives under the SIGHT Scheme or PLI benefits**, indicating room for even lower prices once policy support is fully leveraged. While global peers benefit from aggressive subsidies like the **US IRA (\$3/kg)** and **EU RFNBO subsidies**, India’s cost base is largely driven by **natural competitiveness** in renewable energy. This positions India and L&T specifically **as a strong contender in the global green hydrogen value chain, with potential** to serve both domestic industrial demand and export markets.



L&T’s \$4.67/kg green hydrogen bid is globally competitive lower than EU imports and close to Middle East prices. With India’s low solar costs and excluded subsidies, prices could drop further, boosting India’s export potential.

Offtake Agreements: Anchoring Price Discovery for India’s Green Hydrogen Future

Offtake agreements are proving vital for stabilizing and scaling **India’s green hydrogen market. The Panipat project’s 25-year offtake deal at ₹397/kg** with IOCL not only secures price certainty but enhances project bankability setting a credible pricing benchmark for future bids. With scale-driven efficiencies and larger capacities on the horizon, **prices may fall below ₹350/kg**. Comparable to global models like Saudi Arabia’s NEOM, such contracts could help India emerge as a competitive green hydrogen exporter, provided logistical hurdles are effectively managed.

Exhibit : Role of Off-Take Agreements in Price Discovery

Aspect	Impact on Panipat Project	Future Implications
Price Stability	Fixed ₹397/kg for 25 years reduces volatility	Sets a benchmark for future bids (likely ₹380-420/kg range)
Bankability	Guaranteed offtake by IOCL improves project financing.	Encourages more BOO models in India (e.g., GAIL, NTPC tenders)
Scale Effect	10,000 TPA allows economies of scale.	Larger future projects (e.g., 100,000 TPA) could drive prices below ₹350/kg.
Global Contracts	Comparable to Saudi NEOM (\$4.50/kg, 25-year offtake).	Indian prices may attract global demand if logistics costs are managed.

Note: Off-take agreements de-risk projects and accelerate price discovery, making India a potential green H₂ export hub.

Source: eninrac consulting, IOCL Bid Details

Realistic Implications of India’s Green Hydrogen Push: A Phased Perspective

India’s green hydrogen rollout is poised to deliver tangible impacts in both the short and long term. Between 2024 and 2027, early industrial adopters, particularly in refineries and fertilizer production will drive initial demand. This foundational uptake will be critical for de-risking investments, **with \$2–3 billion expected to flow into domestic electrolyzer manufacturing**. By 2030, deeper decarbonization in hard-to-abate sectors like steel and transport will take shape, positioning **India to capture 5–10% of the global electrolyzer market**. On the socio-economic front, each 100,000 TPA project could generate around 5,000 jobs, providing a significant boost to engineering and O&M sectors. **Environmentally, a single project like Panipat could cut 1 million tonnes of CO₂ annually**. If India scales to 5 million tonnes of green hydrogen by 2030, it will make a substantial contribution toward meeting its NDC targets marking green hydrogen as both a climate and industrial transformation enabler.

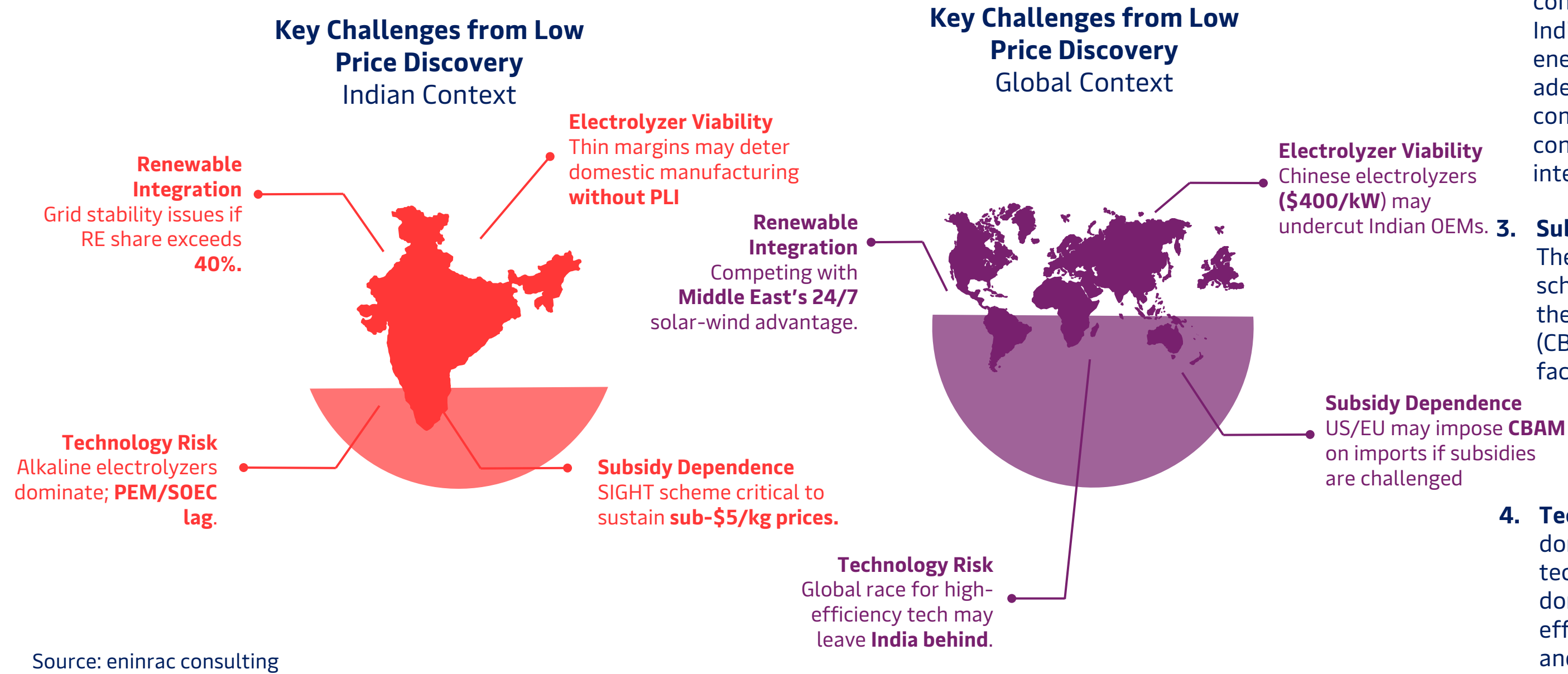
Exhibit : Implications of L&T’s Bid

Implication Area	Short-term (2024-2027)	Long-term (2030+)
Industry Adoption	Refineries, fertilizers to adopt green H ₂ first.	Steel, transport sectors to follow. We might see similar tenders from these sectors
Investment Flow	\$2-\$3B expected in Indian electrolyzer manufacturing.	India could capture 5%-10% of global electrolyzer market.
Job Creation	~5,000 direct/indirect jobs per 100,000 TPA capacity.	Skilled workforce demand in engineering and O&M.
Emissions Reductions	~1 MT CO ₂ /year saved at Panipat.	NDC targets achievable if 5 MT capacity is built by 2030.

Note: Accelerates India’s energy transition but requires parallel renewable capacity expansion.

Source: eninrac consulting, IOCL Bid Details

Exhibit : Key Challenges of Low Price Discovery – Indian & Global Context



Low Price Discovery in India’s Green Hydrogen Market: Key Structural Challenges

While India’s recent green hydrogen bids signal strong global competitiveness, the aggressive price **discovery below \$5/kg** raises several structural challenges that could impact long-term market sustainability. These challenges are enlisted as below:

1. Electrolyzer Viability remains a pressing concern. With bid margins already tight, domestic manufacturers may find it unviable to scale without Production Linked Incentives (PLI). Compounding this is the influx of ultra-low-cost Chinese electrolyzers priced at ~\$400/kW, which threaten to undercut Indian OEMs and stall local capacity development.

2. Renewable Energy Integration poses technical constraints. As green hydrogen production scales, India's grid could face stability issues if renewable energy penetration surpasses 40%, especially without adequate storage and smart grid solutions. Meanwhile, competitors like the Middle East benefit from near-continuous solar-wind availability, reducing intermittency costs.

3. Subsidy Dependence is another area of vulnerability. The viability of current low prices hinges heavily on schemes like SIGHT. Should globally trade policies like the EU’s Carbon Border Adjustment Mechanism (CBAM)—scrutinize subsidy-backed exports, India may face restricted market access or increased tariffs.

4. Technology Risk looms large. India's market is still dominated by alkaline electrolyzers, while advanced technologies like PEM and SOEC remain underdeveloped domestically. As global players invest in next-gen, high-efficiency systems, India risks falling behind unless R&D and commercialization efforts are rapidly accelerated.

In sum, while India’s price competitiveness is commendable, a balanced strategy is essential, one that supports innovation, ensures fair margins, and fortifies grid and industrial readiness to deliver a resilient green hydrogen ecosystem.

About Eninrac

Eninrac Consulting is a global market research and advisory firm that specializes in providing comprehensive insights and strategic solutions across various industries. Our services are designed to help businesses navigate market complexities, identify growth opportunities, and achieve sustainable success.

Eninrac's USP lies in its ability to deliver pragmatic, data-driven solutions tailored to the unique needs of each client. By maintaining close collaboration and adopting a hands-on approach, they ensure that their insights are actionable and aligned with clients' strategic objectives. This personalized guidance through diverse markets and cultures sets them apart in the consulting landscape. By leveraging the services offered, Eninrac Consulting empowers businesses to improve processes, understand customers, and solve problems effectively, thereby driving growth and maintaining a competitive edge in their respective industries.

eninrac.com

©Eninrac Consulting Private Limited. All rights reserved.

Headquarters:

Eninrac Consulting
B-130, Sector 65, Noida, Uttar
Pradesh, India

Tel: +91 93190 48963/47963
www.eninrac.com



2024 marks our 5th
anniversary as a performance
leader, delivering superior
research and advisory services.