



The Golden Age of LNG

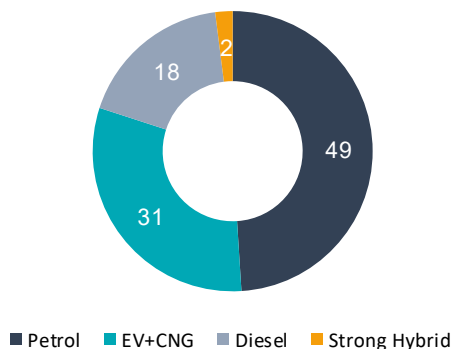
Evolution, Unprecedented Agility & The Coming Wave of Structural Abundance

The views, data, estimates and projections presented in this presentation are based on publicly available information and external sources and are intended for information and discussion purposes only. They do not represent the official views or position of IndianOil Corporation Limited. While reasonable care has been taken in compiling the information, no representation or warranty is made regarding its completeness or accuracy.

Transport Sector Fuel Transition

Clean powertrains (EV + CNG + S.Hybrid) reached 33% run-rate, closer to pure Petrol (42%) in cars—while trucks remain 83% diesel, representing India's next LNG frontier

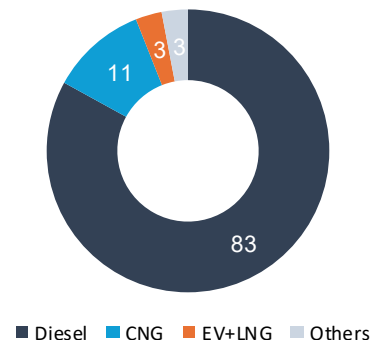
Cars (Personal Cars + Commercial Cabs)



Cars: 49% Petrol | 31% EV+CNG | 17% Diesel | 2% Strong Hybrid

- In Gujarat & Maharashtra, EV+CNG share is 47% vs Petrol 31%
- Cabs remain over 75% CNG & EV. In Guj. & MH, CNG share alone is >85%

Trucks (Commercial Goods & Haulage)



Trucks: 83% Diesel | 11% CNG | 3% EV+LNG | 3% Petrol

- MHCV Trucks – Diesel share 99%; Pure EV 0.7% (353), LNG 0.3% (164)
- ~ 1500 MHCV Trucks registered under LNG till Aug'26.

History of LNG

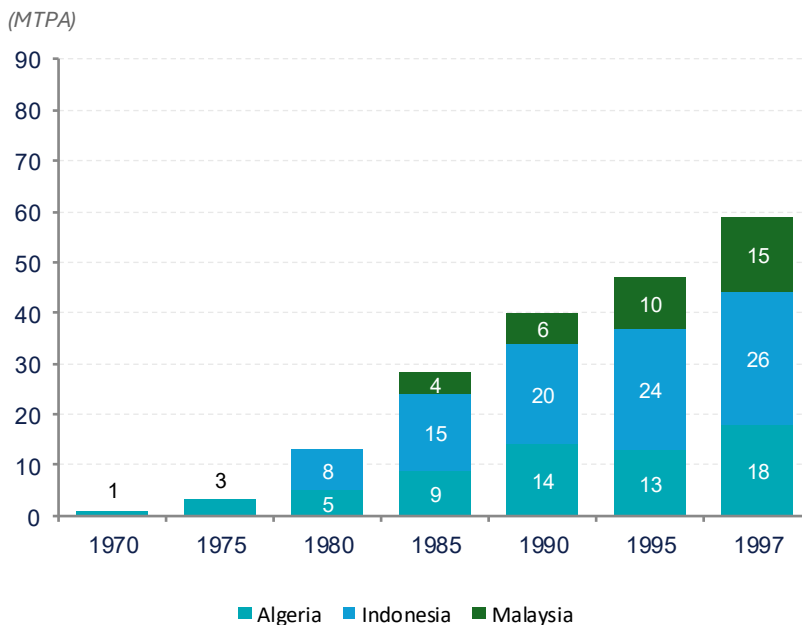
Explained in 3 Era's

Era 1: The Pioneers & Foundations of LNG Trade (1964 – 1990s)

Proved technical viability and Laid foundation for Asia's Natural Gas Market

Unique Era Characteristics

- Initially proposed to monetize stranded gas fields
- Algeria, Indonesia and Malaysia were major suppliers
- Japan and South Korea were the major buyers
- Characterized by rigid, fixed-destination, take-or-pay contracts with JCC-linked pricing

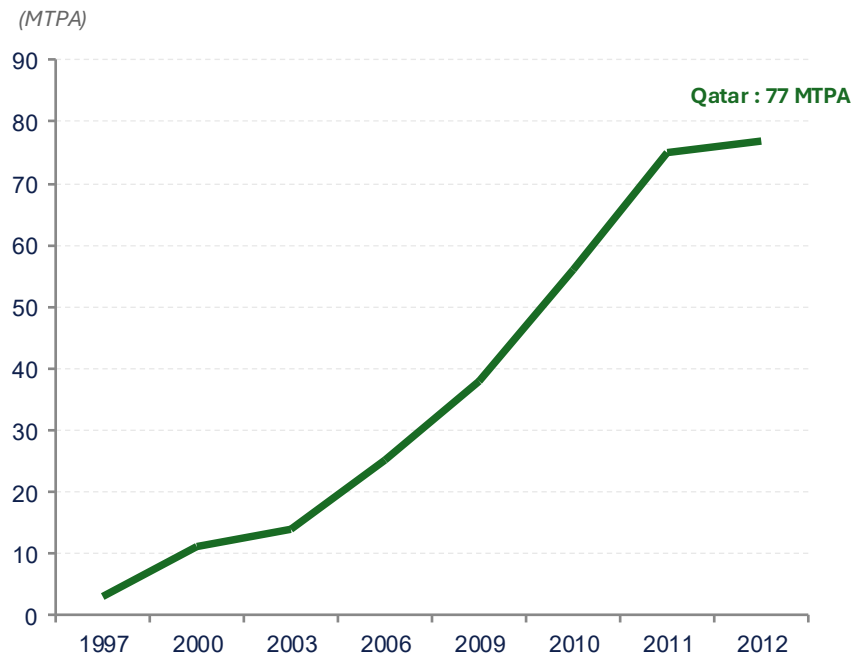


Era 2: The Qatari Mega-Train Revolution (Late 1990s–2010s)

Unmatched low upstream extraction costs and mega-train scale established Qatar as the world's swing supplier

Unique Era Characteristics

- Had access to low cost upstream gas with rich condensate
- Deployed mega-trains & carriers, slashing unit liquefaction costs.
- Build world's densest LNG hub.
- First exporter with flexibility to swing supplies between Europe vs Asia.

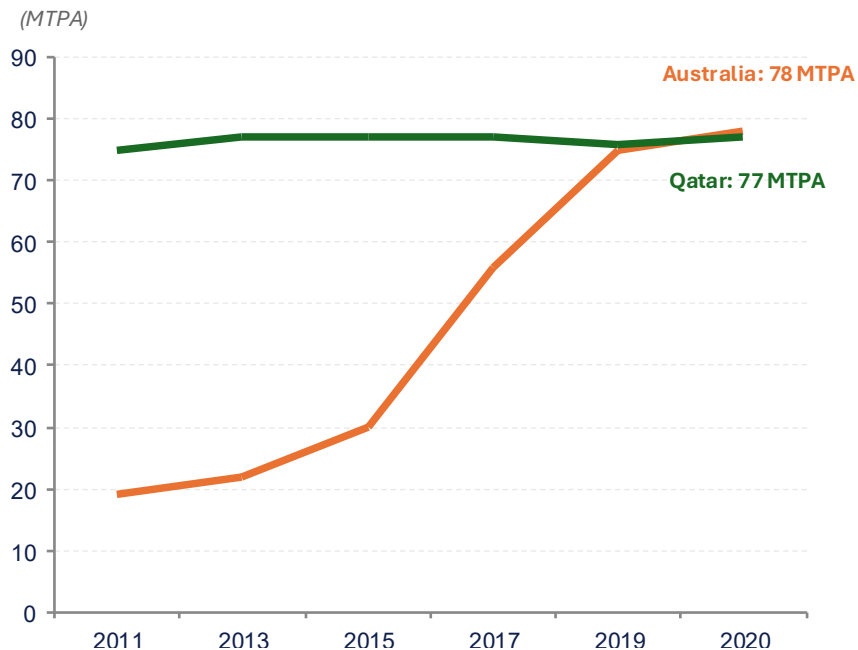


Era 3: The Australian Wave (2010s)

A massive \$200B+ capital cycle positioned Australia alongside Qatar as an Asia-Pacific baseload pillar

Unique Era Characteristics

- Pioneered onshore Coal Seam Gas to LNG
- Brought a much broader mix of private companies, international oil majors into LNG development
- Asian buyers (JERA, KOGAS, CNOOC) took direct minority equity stakes.

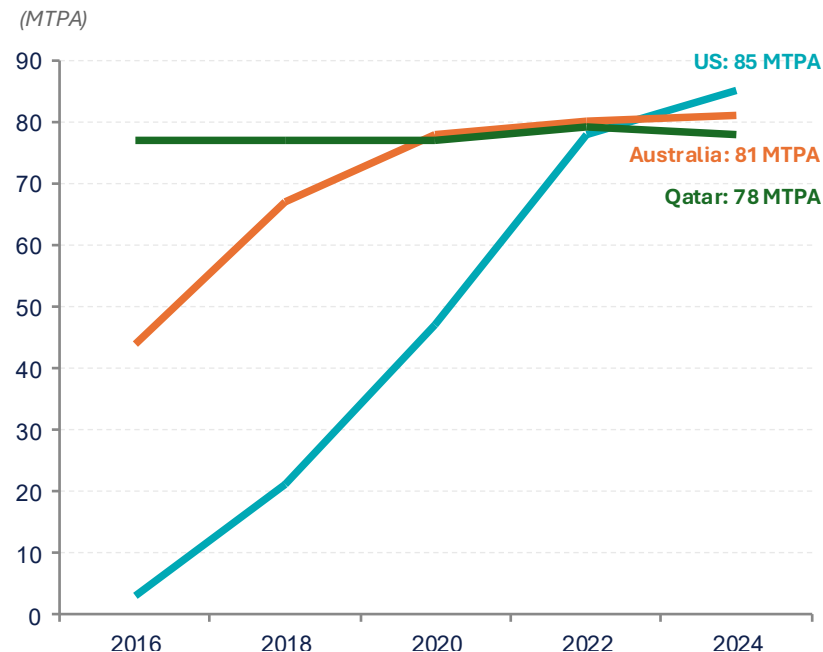


Era 4: The US Shale Gale & Henry Hub Disruption (2016–Present)

Hydraulic fracturing, tolling models, and destination-free contracts transformed Global LNG into a flexible commodity

Unique Era Characteristics

- Most developed gas market became a net exporter
- Repurposed import terminals & vast pipeline grid dramatically cut capex.
- Tolling model decoupled upstream liquefaction from shipping and destination marketing.
- Zero Destination Clauses & Henry Hub liquidity - Increased Spot trading

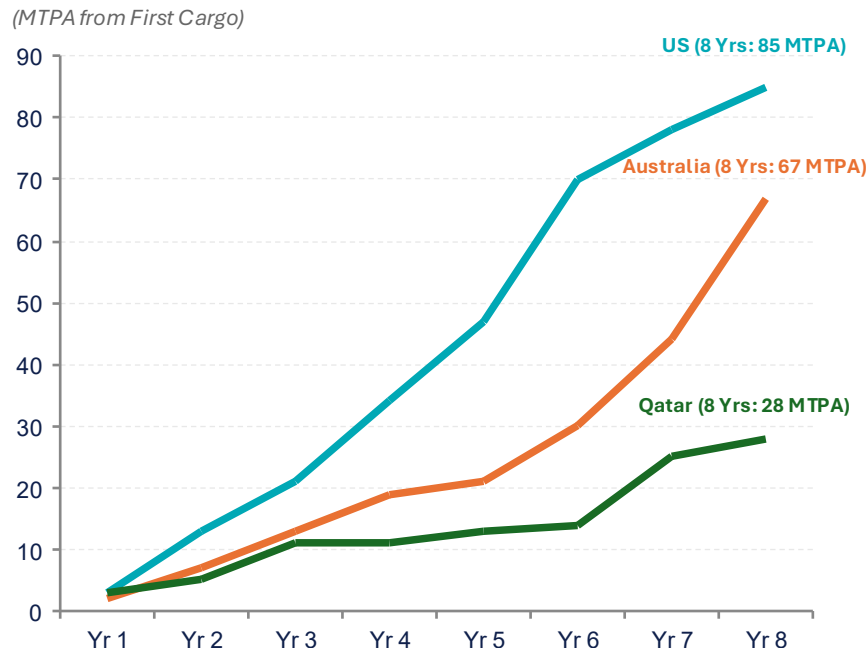


Speed of Execution: US Outpaced Australia & Qatar

Leveraging existing import infrastructure, merchant pipelines, and tolling enabled the US to add 85 MTPA in record time

US Scaled in Just 7 Years

- Repurposed existing storage tanks, berths, and pipeline interconnections.
- No dedicated upstream field exploration.
- Modular EPC: Standardized mid-scale refrigeration trains compressed execution cycles
- FID-to-COD: US averaged 42–48 months vs 65–85 months for Australian mega-projects.
- Infrastructure companies evolved into energy companies

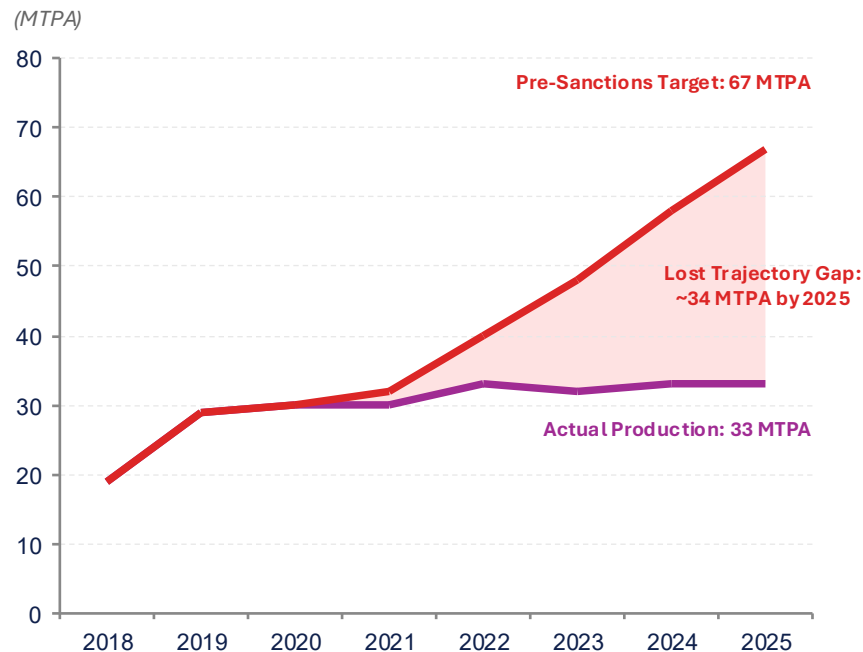


Russia's Stranded Ambition & The Sanctions Chokehold

Western technology bans and Arctic tanker sanctions severed Russia from its 100 MTPA 2030 export roadmap

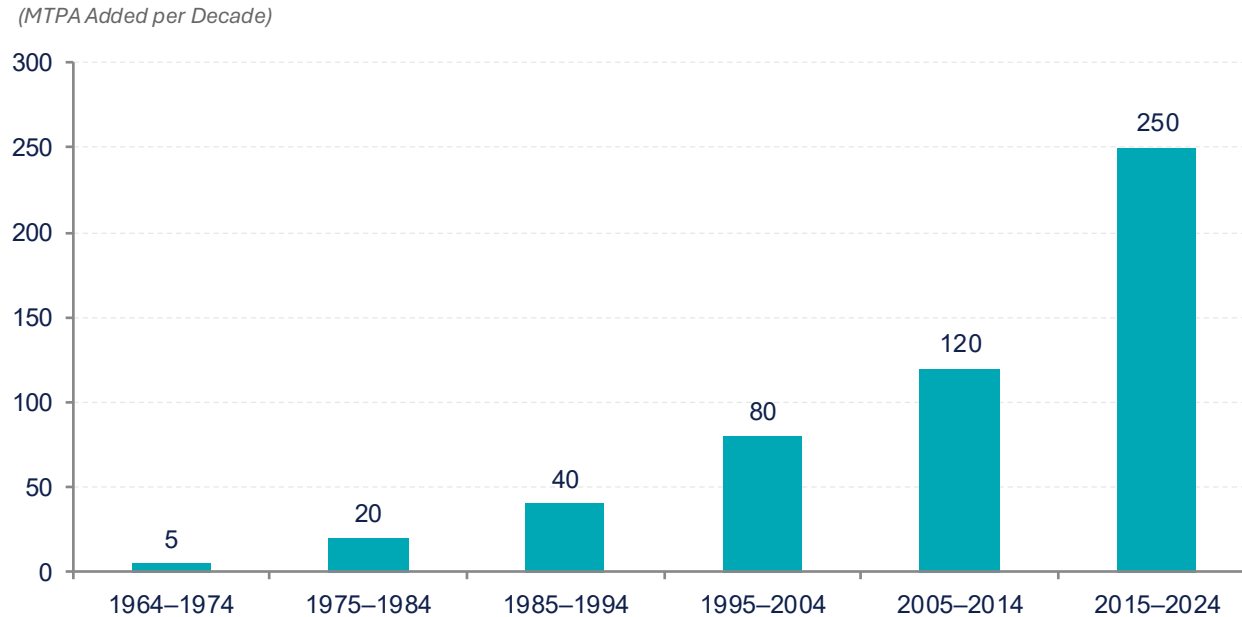
Unique Characteristics

- Pre-2022 Goal: Russia targeted 100–140 MTPA by 2030, anchored by Yamal & Arctic LNG 2.
- Technology Embargo: Linde and Baker Hughes exits halted Arctic Cascade turbine supply.
- Vessel Sanctions on Arc7 ice-class carriers crippled year-round North Sea Route logistics
- Existing Projects underutilized. New Projects stalled.



Global LNG Capacity Additions by Decade (1964–2024)

Liquefaction additions took 40 years to reach 80 MTPA per decade, but surged by 250 MTPA in 2015–2024 alone—demonstrating exponential infrastructure velocity



Systemic Resilience: Surviving the Russian Cutoff & Hormuz Exposure

Absorbing Europe's +50 MTPA 1-year surge & 21% Hormuz Supply Cut

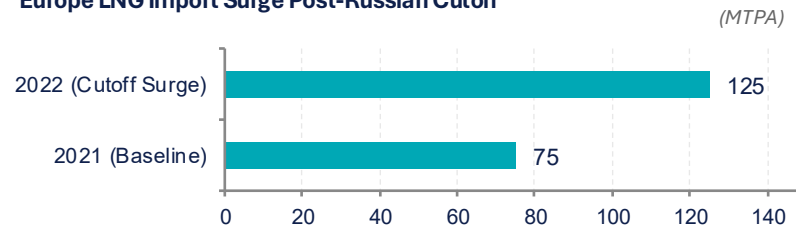
Absorbing the 2022 Russian Cutoff

- Europe absorbed +50 MTPA (+66%) in 12 months to replace Russian pipeline gas.
- Destination-free Gulf Coast exports redirected across the Atlantic within days.

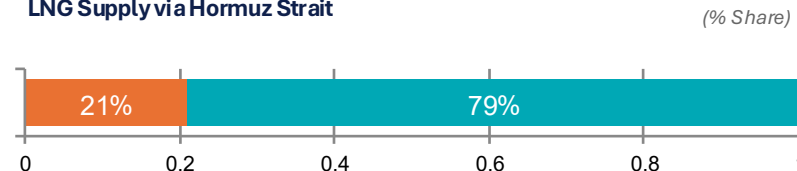
Weathering Hormuz Chokepoint Exposure

- Expanding Redundancy: 190+ MTPA of new Atlantic & Pacific supply dilutes Hormuz share to <16% by 2030.
- Dual-Shock Resilience: Structural spare capacity and flexible destination trading keep the market resilient.

Europe LNG Import Surge Post-Russian Cutoff



LNG Supply via Hormuz Strait



The Golden Age Ahead: 2026–2040 Supply Status vs Global Demand

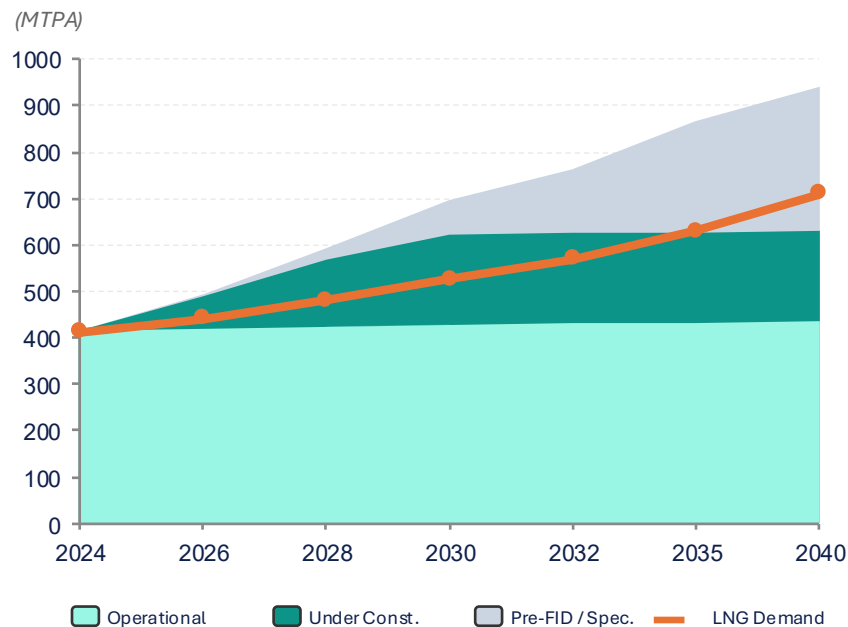
Over 190 MTPA of capacity currently under construction will tip global LNG into structural oversupply by 2027–2030

The Coming Supply Deluge

- Under-Construction Surge: 193 MTPA under construction will push supply past 600 MTPA by 2029.
- Structural Surplus: Nameplate capacity exceeds demand by 60–100 MTPA across 2028–2033.

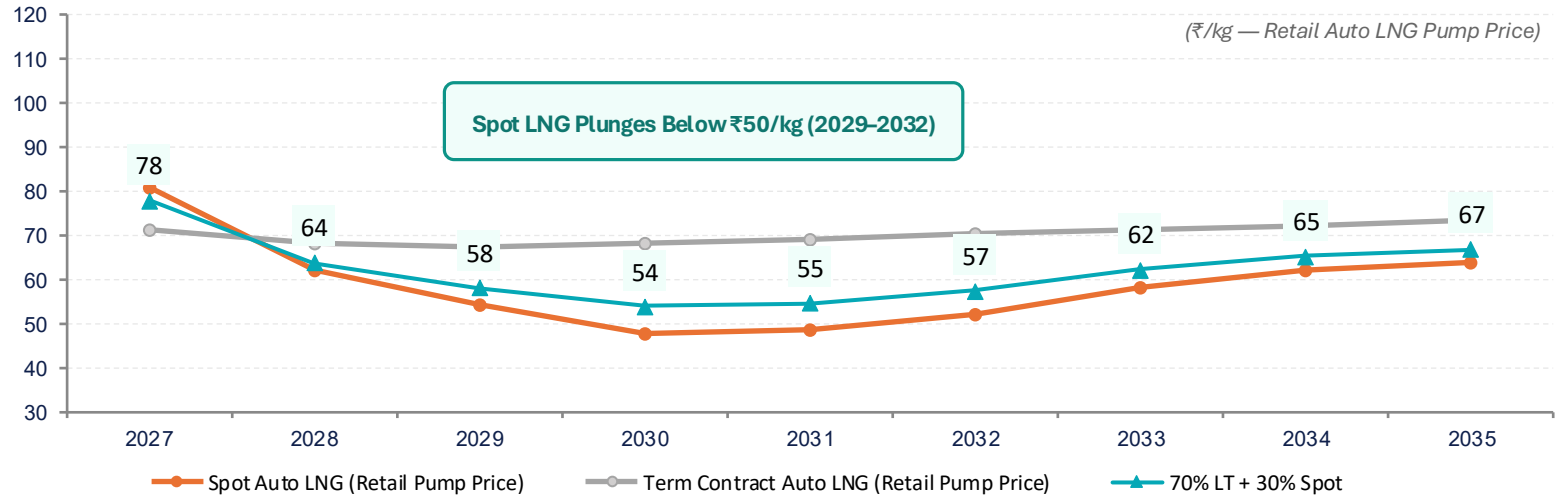
Buyer Market Dynamics

- Buyer Leverage: Emerging Asian importers (India, Vietnam, Philippines) gain contracting power.
- Benchmark Moderation: Spot prices projected to settle near \$7–\$9/MMBtu marginal cost.



What Global LNG Abundance Means for Auto LNG Buyers (2027–2035)

Global LNG surplus could bring Auto LNG to ₹54–64/kg during 2028–33, with potential 35–45% savings vs diesel



Contract Slope Assumptions

Slope drops 13.5% → 12% by 2029 (flat to 2035), returning to 13% by 2040.

Blending Ratio

Typical inline with global trends

Cost Buildup

Buildup based on LNG cost for Gujarat Delivery + ₹10/kg for RO cryo-storage & opex.

Beyond Earth: How SpaceX & Tech Titans Are Elevating Global LNG

Aerospace pioneers selected Liquid Methane (a form of LNG) over traditional rocket fuels—validating LNG as humanity's clean, high-performance energy of the 21st century

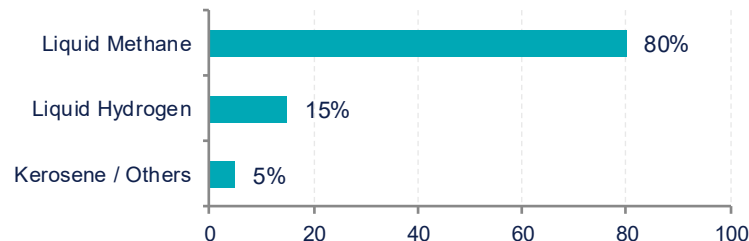
Tech Titans Standardized on LNG

- Universal Industry Shift: SpaceX (Starship), Blue Origin, and ISRO to standardize on Liquid Methane (LNG).
- SpaceX is drilling its own gas wells in Texas to secure dedicated, feedstocks. Building dedicated on-site liquefaction and mega-storage at Starbase.

Ultimate Brand Elevation

- Global Prestige: Premier aerospace minds view methane as the fuel of the future.
- Cryo R&D to Industry: Breakthroughs in tanks & cryo-handling flow directly into LNG ships & trucks

Next-Gen Heavy Rockets: Propellant Adoption (% of In-Development Heavy Launchers)



The India's Story

The 1999 Foundation - The Dahej LNG Terminal

1998: The Sovereign PSU Consortium

- Incorporated on by Govt of India to build national LNG infrastructure.
- Four Maharatna promoters hold equal 12.5% equity: GAIL, ONGC, IOCL, and BPCL.

1999: Landmark Qatar Deal & Delivery

- Signed India's historic 25-yr SPA with RasGas (Qatar) for 7.5 MMTPA (5.0 MMTPA initial Dahej phase).
- First commercial cargo arrived at Dahej in Jan 2004

Dahej: Relentless Expansion to 22.5 MMTPA

- Rapid capacity scale: 5.0 MTPA (2004) → 10.0 (2009) → 15.0 (2016) → 17.5 (2019).
- Commissioned Tanks 7 & 8 in 2026 reaching 22.5 MMTPA, ranking among the world's largest terminals.



Import Terminals : 58.5 MMTPA Operating + 9.0 MMTPA Upcoming



INDIA LNG INFRASTRUCTURE

- West Coast Operating:** 6 Terminals (48.5 MTPA)
- East Coast Operating:** 2 Terminals (10.0 MTPA)
- Upcoming FSRUs:** 2 Projects (9.0 MTPA)

NATIONAL CAPACITY BREAKDOWN

West Coast Operating (6): **48.5 MMTPA (83%)**

East Coast Operating (2): **10.0 MMTPA (17%)**

Total Operating Network (8): 58.5 MMTPA

Upcoming FSRUs (Jafrabad & Gopalpur): **+9.0 MMTPA**

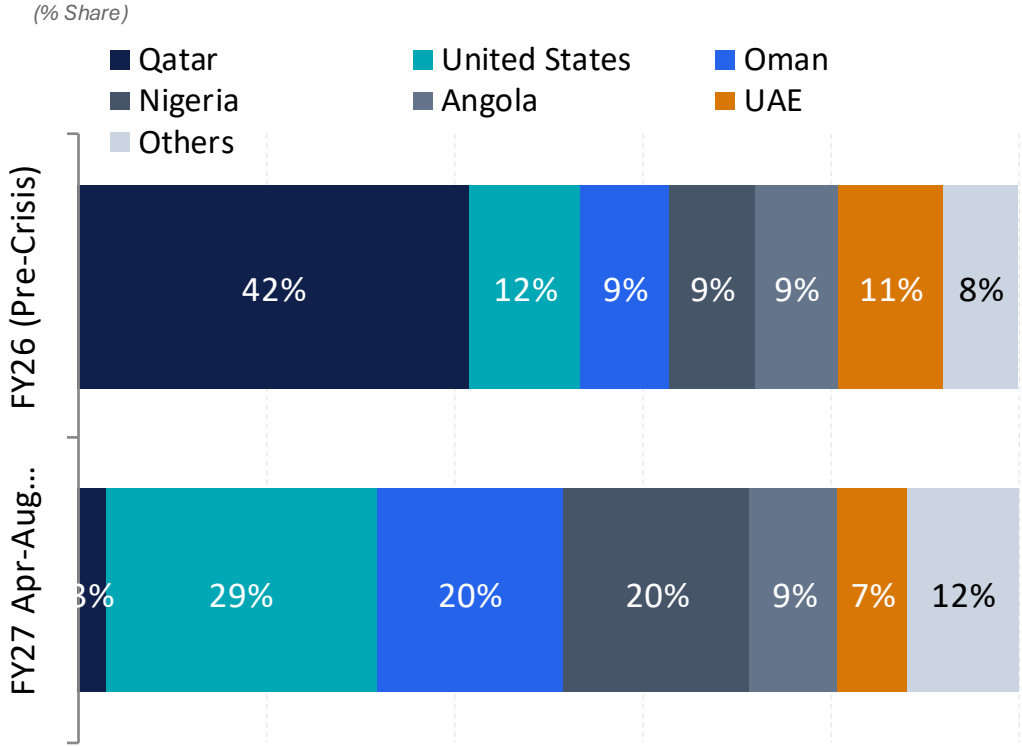
Target Strategic Network: 67.5 MMTPA

India's Long-Term Contracts

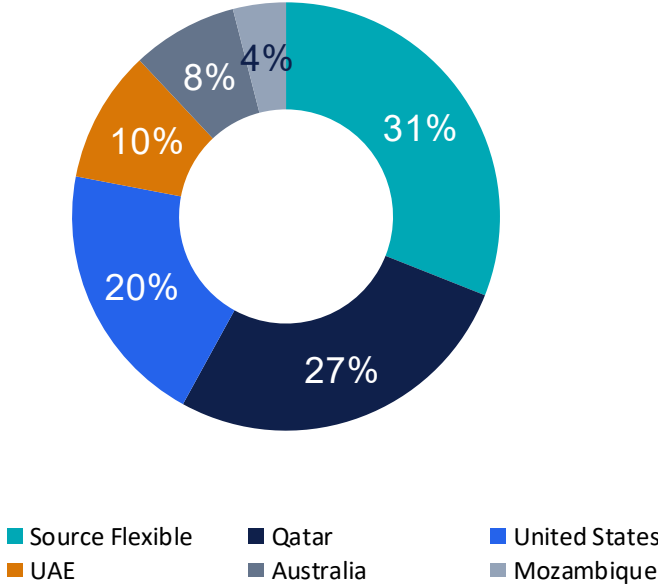
Offtaker / Indian Entity	2024	2026	2030	Suppliers / Projects
Petronet LNG (PLL)	8.95	9.33	10.15	QatarEnergy (7.5 MTPA to 2048), ExxonMobil Gorgon (1.42 MTPA Australia)
GAIL (India)*	8.55	10.91	10.03	Sabine Pass (3.5), Cove Point tolling (2.3)*, SEFE, Vitol, ADNOC
IndianOil	0.95	3.45	3.94	ADNOC Ruwais, TotalEnergies, QatarEnergy etc
GSPC	2.75	3.18	4.40	Qatar, portfolio supply (BP, Shell)
BPCL	0.25	0.73	1.12	Mozambique LNG Area 1 equity offtake (ADNOC term supply)
HPCL	0.00	0.00	0.50	ADNOC
Others (Private Buyers)	0.50	0.94	1.83	Buyers: Deepak Fertilisers , Torrent Power, AM/NS
Total Contracted Cover (MMTPA)	21.95	28.54	31.97	Diversified across US, Qatar, UAE, Australia, and Africa

Source: WoodMac, Company Filings. Not comprehensive. *GAIL includes 2.30 MMTPA Cove Point tolling agreement.

Geopolitical Agility: How India Navigating the Hormuz Supply Disruption



Contracted Supply Portfolio
(2030 Horizon)

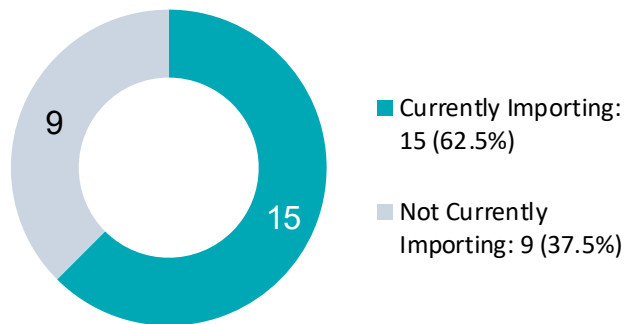


Source: PPAC LNG Import Assessments, S&P Global Commodity Insights

Next Steps for India

More Diversification

Active 2026 Deliveries vs. Inactive Sovereign Suppliers



● CURRENTLY IMPORTING NATIONS (15)

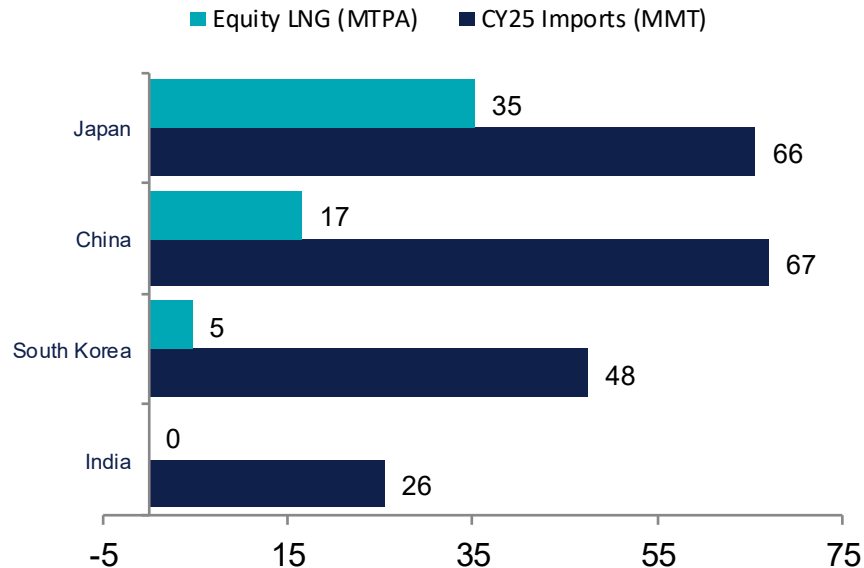
Qatar, United States, UAE, Nigeria, Oman, Angola, Australia, Equatorial Guinea, Cameroon, Mozambique, Mauritania-Senegal, Norway, Trinidad & Tobago, Indonesia, Republic of the Congo.

○ NOT CURRENTLY IMPORTING NATIONS (9)

Algeria, Brunei, Egypt, Malaysia, Mexico, Papua New Guinea, Peru, Russia, Yemen.

More Equity LNG

CY 2025 Platts Import Volume vs. GIIGNL Equity Stakes



Thank You

Join the Ranjith Energy Digest WhatsApp Community

Scan the QR code to connect directly and get insights & updates.

Visit: ranjithenergydigest.com

for more insights on gas markets and pricing.



Scan to join WhatsApp Community