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EDITORIAL ANALYSIS

India's LPG Strategic Vulnerability — The Hormuz Chokepoint Problem

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India's LPG Strategic Vulnerability — The Hormuz Chokepoint Problem

The Hindu 21 April 2026 **GS3**

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EDITORIAL SUMMARY

The Hindu, April 21, 2026 — The editorial analyses India’s critical dependence on the Strait of Hormuz for LPG imports, exposing a structural gap in India’s energy security architecture. While India maintains crude oil SPR covering ~9-10 days, LPG strategic reserves stand at only **140,000 tonnes** — covering a matter of days for a country where over **330 million households** depend on LPG (Pradhan Mantri Ujjwala Yojana beneficiaries included). The piece calls for underground LPG storage caverns, increased domestic production from offshore blocks, and acceleration of the Piped Natural Gas (PNG) network as a resilience-building substitute.

INDIA’S LPG DEPENDENCY — THE NUMBERS

Import Dependence

PARAMETER	VALUE
Annual LPG consumption	~29-30 million tonnes
Domestic LPG production	~12-13 million tonnes
Import share	~55-60%
Primary import source	Middle East (Saudi Arabia, UAE, Qatar)
Import route	Strait of Hormuz
LPG strategic reserves	~140,000 tonnes (days of buffer only)
LPG beneficiary households	330+ million (incl. PMUY)

India is the **world’s second-largest LPG consumer** after China, and domestic production covers only about 55% of demand — the rest transits through the Strait of Hormuz.

The Strait of Hormuz Chokepoint

The **Strait of Hormuz** — a 39 km wide waterway between Iran and Oman — is the world’s most critical energy chokepoint:

- ~20% of global crude oil and petroleum products
- ~25-30% of global LNG trade
- The majority of India’s LPG imports

There is **no alternative route** for tankers coming from the Persian Gulf. If Iran mines or blockades the Strait (as it has threatened repeatedly), India’s LPG supply chain faces immediate disruption.

WHY LPG IS SOCIALLY CRITICAL IN INDIA

LPG is not just an energy commodity in India — it is a **social equity and public health issue**:

Pradhan Mantri Ujjwala Yojana (PMUY)

PARAMETER	VALUE
Launched	May 2016
Beneficiaries	10 crore+ BPL households
Objective	Clean cooking fuel for women below poverty line
Ministry	Petroleum and Natural Gas
Impact	Reduced indoor air pollution (7th largest health risk)

For PMUY beneficiaries — typically rural, low-income women — disruption in LPG supply means **reversion to biomass burning** (wood, dung cakes, crop residue), with severe health consequences:

- Indoor air pollution from biomass causes ~600,000-800,000 deaths annually in India
- Respiratory diseases, low birth weight, eye damage disproportionately affect women and children

Any Hormuz disruption that spikes LPG prices or creates physical shortages would disproportionately **harm the most vulnerable households** that the Ujjwala scheme was designed to protect.

INDIA'S STRATEGIC LPG RESERVE — THE GAP

Current Position

India's strategic energy reserves compare unfavourably with LPG:

ENERGY TYPE	INDIA'S STRATEGIC RESERVE	COVERAGE
Crude oil	5.33 MMT (Vizag, Mangaluru, Padur)	~9-10 days
LPG	~140,000 tonnes	Days only
Natural gas	Very limited	Minimal

The contrast is stark: India has invested heavily in crude oil SPR but has **almost no LPG buffer**.

International Comparison

Countries with advanced LPG/energy storage:

- **Japan:** 90-day reserve across petroleum products; underground LPG caverns
- **South Korea:** Underground LPG cavern storage network
- **EU:** 90-day reserve standard under IEA membership
- **India:** Well below these standards for all categories

UNDERGROUND LPG CAVERN STORAGE — THE SOLUTION

What Are LPG Caverns?

Underground LPG cavern storage involves excavating salt caverns or rock caverns deep underground (300-1000 metres) to store liquefied petroleum gas under pressure:

- **Natural salt caverns** (solution mining in halite deposits) — the most cost-effective option used globally
- **Mined rock caverns** — expensive but suitable where salt deposits don't exist
- India has **salt deposits in Gujarat and Rajasthan** potentially suitable for cavern development

Advantages

FEATURE	BENEFIT
Large volume	Caverns can store millions of tonnes
Low surface footprint	Underground — no land acquisition conflict
Long-term storage	Salt caverns maintain integrity for decades
Fast draw-down	Can release stored LPG quickly during crises
Low operating cost	Once built, maintenance is minimal

India's **Hindustan Petroleum Corporation Limited (HPCL)** and **Bharat Petroleum (BPCL)** have studied underground LPG storage, but implementation has lagged due to upfront capital costs.

DOMESTIC PRODUCTION — THE D-6 BLOCK

The **KG-D6 Block** (Krishna-Godavari Basin, operated by Reliance Industries + BP) has revived India's deepwater gas and NGL (Natural Gas Liquids, which include LPG components) production:

D-6 BLOCK PARAMETER	DETAIL
Operator	Reliance Industries + BP (51%:49% after 2011 restructuring)
Location	Krishna-Godavari Basin, Bay of Bengal
Peak production	~60 MMSCMD (2010); declined; revived with R-series fields
Current status	R-Cluster, Satellite fields producing; MJ field added 2023
LPG/NGL potential	Significant associated LPG from deepwater fields

Accelerating production from domestic offshore blocks reduces import dependence and Hormuz exposure.

PNG NETWORK — THE LONG-TERM SUBSTITUTE

Piped Natural Gas (PNG) for cooking is a cleaner, safer, domestically supplied alternative to LPG cylinders:

PNG VS. LPG	PNG	LPG
Supply source	Domestic pipelines	Imported (Hormuz)
Price stability	More stable	Volatile with import prices
Safety	Continuous supply, no cylinder storage	Cylinder leakage risk
Rural reach	Limited (pipeline infrastructure)	Wide (last-mile cylinder delivery)
Current coverage	~10 million households	330+ million households

India's **City Gas Distribution (CGD) network** – under the regulatory oversight of **PNGRB (Petroleum and Natural Gas Regulatory Board)** – is being rapidly expanded to cover more Geographical Areas (GAs). The 11th and 12th CGD rounds have added hundreds of new districts.

For energy security, converting urban and peri-urban households from LPG to PNG reduces Hormuz-exposed demand – though rural coverage via PNG remains distant.

POLICY RECOMMENDATIONS

- 1 **Build LPG underground cavern storage** – target 30-day buffer by 2030; Gujarat salt beds as primary site
- 2 **Accelerate KG-D6 and other deepwater NGL production** – reduce import share from 55% to 40% by 2030
- 3 **Expand CGD/PNG network** – priority: top 500 towns; convert 50 million LPG households to PNG
- 4 **Diversify LPG suppliers** – USA (shale LPG), Australia (LNG), West Africa as non-Hormuz alternatives
- 5 **Review PMUY refill economics** – ensure low-income households retain LPG access even during price spikes

UPSC RELEVANCE

PAPER	ANGLE
GS3 — Energy	LPG imports, Strait of Hormuz, SPR, underground storage, D-6 block
GS3 — Economy	Energy security, CAD impact, import dependence
GS2 — Social Policy	PMUY, clean cooking, indoor air pollution, women's welfare
GS3 — Environment	Indoor air pollution, biomass burning health impacts
Mains Keywords	PMUY, LPG imports, Strait of Hormuz, underground LPG storage, KG-D6, CGD network, PNGRB, energy security

KEY FACTS

- **India's LPG consumption:** ~29-30 million tonnes/year; import share ~55-60%
- **LPG strategic reserve:** ~140,000 tonnes — days of buffer only
- **Crude SPR:** ~5.33 MMT — ~9-10 days coverage
- **PMUY:** Pradhan Mantri Ujjwala Yojana — 10 crore+ BPL households; launched May 2016
- **Strait of Hormuz:** ~39 km wide; ~20% of global oil trade; no alternative route
- **KG-D6 Block:** RIL + BP; Krishna-Godavari deepwater; revived with R-Cluster, Satellite, MJ fields
- **Indoor air pollution:** Biomass cooking causes ~600,000-800,000 deaths annually in India
- **CGD/PNG:** City Gas Distribution under PNGRB; 11th + 12th rounds expanding coverage
- **India:** World's 2nd largest LPG consumer after China
- **IEA standard:** 90-day reserve for member countries; India not an IEA full member (Associate since 2017)

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