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EDITORIAL ANALYSIS

Helium Crisis — How the Hormuz Blockade Threatens India's MRI Machines

INDIAN EXPRESS

24 March 2026

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GS2

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The Indian Express

MAINS RELEVANCE:

GS Paper 2

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INTERVIEW ANGLE

"India imports nearly all its helium, and one-third of global supply is trapped by the Hormuz closure. Should helium be classified as a strategic mineral?"

Helium Crisis — How the Hormuz Blockade Threatens India's MRI Machines

Indian Express highlights an under-discussed casualty of the West Asia conflict: one-third of the world's commercial helium supply, sourced primarily from Qatar, is trapped by the Strait of Hormuz closure. Since helium is essential for cooling superconducting magnets in MRI machines, the disruption threatens to spike MRI costs and reduce healthcare accessibility in India.

THE HIDDEN SUPPLY CHAIN

Most people think of helium as party balloon gas. In reality, helium is a **critical industrial and medical resource** with no substitute for many of its applications.

Helium's Essential Uses

APPLICATION	WHY HELIUM?	IMPACT OF SHORTAGE
MRI machines	Cools superconducting magnets to -269 degrees C	MRIs become inoperable without helium coolant
Semiconductor manufacturing	Inert atmosphere for chip fabrication	Chip production slowdown
Fibre optic cables	Cooling during manufacturing	Telecom infrastructure delays
Space launch	Purging fuel tanks, pressurising systems	Rocket launch delays
Scientific research	Cryogenics, particle accelerators	Research disruption
Welding	Shielding gas for aerospace welding	Aviation maintenance impact

Global Helium Supply

SOURCE	SHARE OF GLOBAL SUPPLY
USA (Federal Helium Reserve, Texas)	~35%
Qatar (RasGas/QatarEnergy)	~30%
Algeria	~10%
Russia	~10%
Australia	~5%
Other	~10%

Qatar's 30% share transits through the Strait of Hormuz — exactly the choke point threatened by the ongoing conflict.

IMPACT ON INDIA'S HEALTHCARE

India has approximately **8,000-10,000 MRI machines** installed across government and private hospitals. Each MRI machine requires periodic helium refills to maintain its superconducting magnets at operating temperature (-269 degrees C, near absolute zero).

The MRI Crisis

FACTOR	CURRENT IMPACT
MRI machines in India	8,000-10,000
Helium import dependence	Nearly 100%
Helium price increase (since conflict)	200-300%
Estimated MRI cost increase for patients	Rs 2,000-5,000 per scan additional
Hospitals reducing MRI availability	Several Tier 2/3 city hospitals

Who Suffers Most?

- **Government hospitals** with limited budgets cannot afford helium price spikes
- **Tier 2/3 city hospitals** that operate on thin margins
- **Cancer diagnosis:** MRI is critical for soft tissue imaging in oncology
- **Neurology:** Brain MRI is irreplaceable for stroke and tumour diagnosis
- **Rural patients:** Already travel long distances for MRI access

INDIA'S HELIUM DEPENDENCE

India has **virtually no domestic helium production:**

- India produces small quantities from natural gas processing (ONGC)
- Rajmahal natural gas fields contain some helium but extraction is not commercially viable at current scale
- India imports nearly all helium, primarily from Qatar and the USA
- **No strategic helium reserve** exists

THE BROADER LESSON — STRATEGIC MINERALS

The editorial argues this crisis exposes a broader vulnerability: India has no framework for **strategic mineral reserves** beyond petroleum.

Minerals India Should Stockpile

MINERAL	USE	IMPORT DEPENDENCE
Helium	MRI, semiconductors, space	~100%
Lithium	EV batteries, grid storage	~100%
Cobalt	Batteries, aerospace alloys	~100%
Rare earths	Electronics, defence, EVs	~70% from China
Gallium	Semiconductors, LEDs	~95% from China
Germanium	Fibre optics, infrared sensors	~90% from China

India's **Critical Minerals Mission** (announced in Budget 2023-24) focuses on lithium and rare earths but does not include helium.

WHAT INDIA SHOULD DO

- ❶ **Classify helium as a critical/strategic mineral** — bring it under the Critical Minerals Mission
- ❷ **Build a strategic helium reserve** — even 6 months of supply would buffer against disruptions
- ❸ **Develop domestic extraction:** Invest in helium recovery from natural gas at ONGC/OIL plants
- ❹ **Diversify suppliers:** Reduce Qatar dependence by importing from USA, Algeria, and Australia
- ❺ **Low-helium MRI technology:** Invest in research for MRI machines that use less helium or alternative cooling (Siemens Healthineers has a helium-free MRI prototype)

UPSC RELEVANCE

Helium properties (noble gas, non-renewable), MRI technology, Strait of Hormuz, Qatar helium production, Critical Minerals Mission

MAINS GS-II:

Healthcare infrastructure, energy/mineral security diplomacy

MAINS GS-III:

Science & Technology (MRI, cryogenics), strategic minerals, supply chain vulnerability

INTERVIEW:

Should India create strategic reserves for minerals beyond petroleum?

★ FACTS CORNER — KNOWLEDGEPEDIA

HELIUM:

Symbol: He, Atomic number: 2

Noble gas: Inert, non-toxic, non-flammable

Boiling point: -269 degrees C (4.2 K) — lowest of any element

Non-renewable: Escapes Earth's atmosphere once released

Global production: ~160 million cubic metres/year

Top producers: USA (~35%), Qatar (~30%), Algeria (~10%)

MRI MACHINES:

Full form: Magnetic Resonance Imaging

Principle: Nuclear magnetic resonance (NMR)

Helium role: Cools superconducting magnets to near absolute zero

MRIs in India: 8,000-10,000

India's MRI per million: ~7 (vs 40 in USA, 55 in Japan)

CRITICAL MINERALS MISSION:

Announced: Budget 2023-24

Focus: Lithium, cobalt, rare earths, nickel, copper

KABIL: Khanij Bidesh India Ltd (joint venture of NALCO, HCL, MECL for overseas acquisition)

Helium: NOT currently included

OTHER RELEVANT FACTS:

Qatar: World's largest LNG exporter and second-largest helium producer

US Federal Helium Reserve: Amarillo, Texas (being privatised)

India's ONGC: Produces trace helium from Rajmahal gas fields

Siemens Healthineers: Developed FreeStar helium-free MRI technology

Noble gases: Helium, Neon, Argon, Krypton, Xenon, Radon

Sources: [Indian Express](#), [Down to Earth](#)

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