

INDIA'S NO.1 ENERGY MAGAZINE

ENERSIDER

MONTHLY

WATER-ENERGY NEXUS IN DATA CENTER INFRASTRUCTURE

NEWSMAKERS: MANOJ KUMAR SHARMA (GAIL), AKHILESH PATHAK (POWERGRID), BHASKAR CHOWDARY NETTEM (ONGC)

Q&A: VIBHA DHAWAN, DIRECTOR GENERAL, TERI | **Q&A:** USHA SUBRAMANIAM, COUNTRY PRESIDENT, INDIA, GRUNDFOS

INDUSTRY REPORT: BY IEA | **ENERSIDER VIEW:** COOL UNDER PRESSURE

DIGITAL MAGAZINE | OCTOBER 2026 | VOLUME 2 | ISSUE 10



INDRAPRASTHA GAS

IGL: India's Future Foreword Energy



Leading India's clean energy landscape

IGL believes in a customer-centric approach and provides clean energy solutions through innovative technology and diversification in India and abroad. IGL is playing a crucial role in the emerging scenario, in augmenting its compression capacity by adding new stations and investing in new-age fuels like Liquefied Natural Gas (LNG), Compressed Bio Gas (CBG) and Hydrogen to address changing energy needs.

IGL's core deliverables include:

- IGL is a leading provider of clean and convenient Piped Natural Gas (PNG) and Compressed Natural Gas (CNG).
- IGL offers various services to meet the needs of Residential, Commercial and Industrial customers.
- IGL is a growing company, strongly committed to safety, innovation, and customer satisfaction.



Customer Care

1800 102 5109 / 1800 180 5109 (24x7 Toll Free)

INDRAPRASTHA GAS LIMITED

An ISO 9001, ISO 14001 & OHSMS 45001 Certified Company

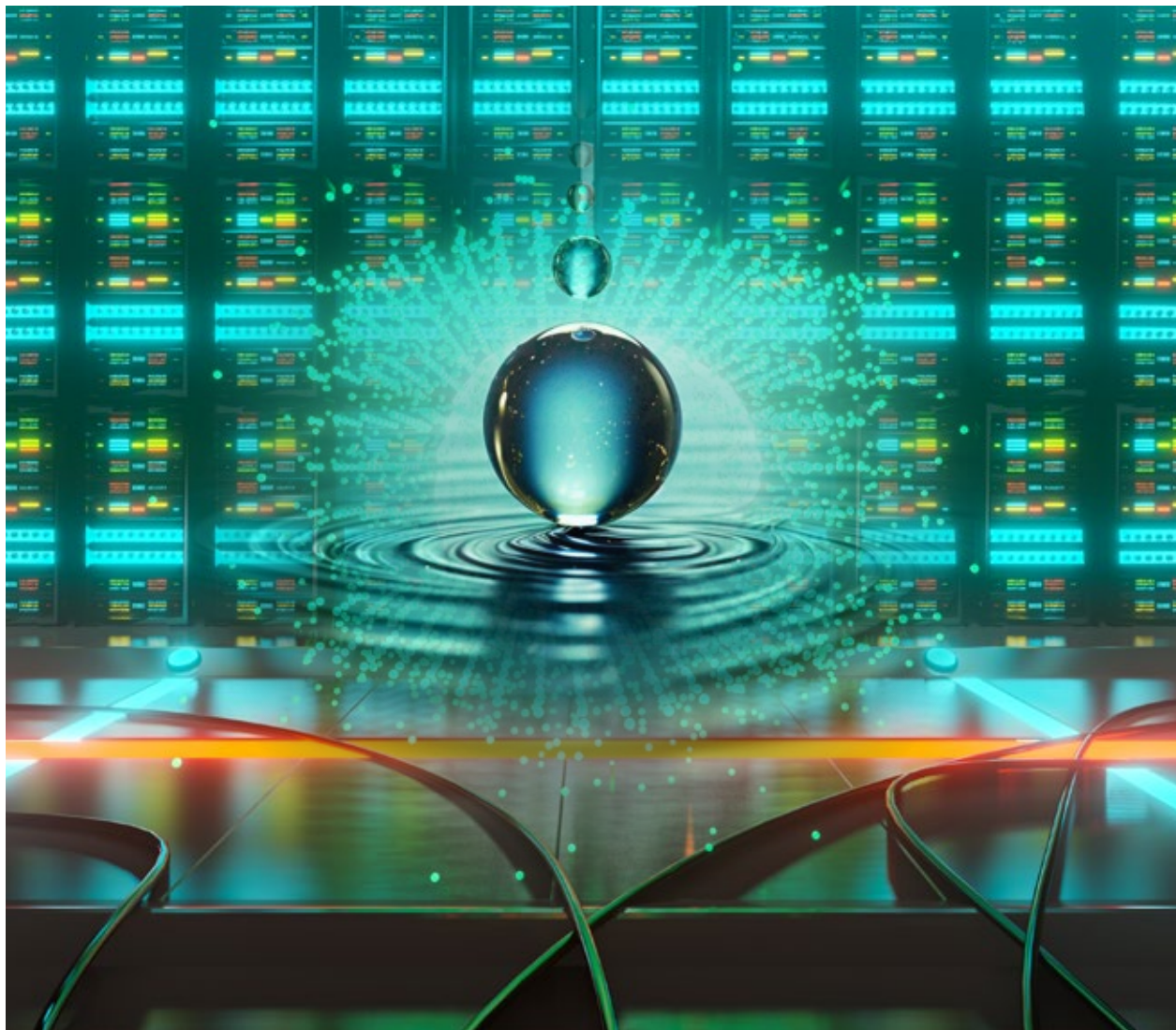
CIN No.: L23201DL1998PLC097614

IGL Bhawan, 4 Community Center, Sector-9, R.K. Puram,

New Delhi-110022. Website: www.iglonline.net

Follow us:    

INSIDENERGY

3**CONTENTS****30****COVER STORY**

Water-Energy Nexus In Data Center Infrastructure

India's AI revolution will be powered by data centres—but can the country fuel its digital ambitions without deepening its water and energy challenges? Drawing on a TERI-Grundfos White Paper, this month's cover story examines the sector's growing resource footprint, evolving policies and the solutions needed to build resilient, resource-efficient digital infrastructure for tomorrow. The challenge is to ensure that India's digital future is not built at the expense of its resource security, but on the foundation of sustainability and resilience.

AN ENERSIDER EXCLUSIVE IN COLLABORATION WITH TERI-GRUNDFOS



12

THE NEWSMAKERS

With decades of experience across infrastructure, power transmission and upstream operations, three leaders take charge of portfolios critical to India's energy sector. Manoj Kumar Sharma assumes the role of Director (Projects) at GAIL (India) Limited, Akhilesh Pathak takes over as Director (Projects) at POWERGRID, and Bhaskar Chowdary Nettem steps in as Director (Production) at ONGC. Their appointments come at a pivotal time for India's evolving energy landscape.

BY ENERSIDER DESK

Q & A



26

In this exclusive interview, TERI Director General Vibha Dhawan discusses the rising water and energy needs of India's growing data centre sector. She articulates why better planning, efficient cooling, clear sustainability standards and stronger coordination are needed to reduce resource use and build sustainable digital infrastructure.

BY ENERSIDER DESK

DR VIBHA DHAWAN, DIRECTOR GENERAL, TERI



38

Speaking to Enersider, Usha Subramaniam, Country President, India, Grundfos, discusses how India can balance data centre growth with responsible water and energy use. She highlights the role of efficient cooling, water reuse, long-term planning and industry collaboration in building sustainable and resilient digital infrastructure.

BY ENERSIDER DESK

USHA SUBRAMANIAM, COUNTRY PRESIDENT, INDIA, GRUNDFOS

AUTHORED ARTICLES

50

The Pedestrian Dilemma- Rights On Paper, Obstacles On The Ground

Walking remains unsafe for millions of Indians despite pedestrians accounting for a significant share of urban travel. With the Supreme Court recognising safe walking as a fundamental right, this article examines gaps in infrastructure, enforcement and public space management. It explores how clear targets, better governance and dedicated funding can make Indian cities safer and more walkable.



BY MEGHA CHAUHAN

42

India's AI Race Will Be Won On Power And Water

India's AI growth needs more than advanced technology and investment. As data centres expand, their growing demand for electricity and water presents new challenges. Better planning, clean energy, efficient cooling and careful site selection can help India build data centres while protecting essential resources and supporting sustainable growth.



BY VINAY BHATI

46

Before We Build: Why India Must Set Its AI Priorities First

India's AI growth needs more than new data centres. It requires careful planning around its purpose, location and resource needs. By improving energy and water efficiency and focusing on applications that benefit society, India can build sustainable digital infrastructure while reducing pressure on essential resources.

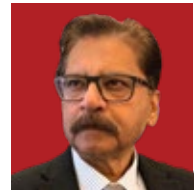


BY MANDAR SUHASRAO JOSHI

40

Digital Public Infrastructure: Foundation For A Connected Future

Digital Public Infrastructure (DPI) is transforming how people access essential services and participate in the economy. India's success with Aadhaar, UPI and India Stack offers a model for other countries. However, expanding access, improving cybersecurity and building trust are crucial to ensuring DPI benefits everyone and supports sustainable growth.



BY MOHD JAMSHED

What Made News?

64

Stay abreast of key energy sector developments, including government initiatives, regulatory changes, major tenders, policy decisions and official announcements.

Beyond Boundaries

44

A focused section covering major energy developments and emerging trends across ASEAN, the Middle East, and North Africa. It offers global perspectives and market insights, providing a broader view of the evolving international energy landscape.



10

ENERSIDER VIEW

Cool Under Pressure

Rising temperatures and growing industries are driving up India's cooling demand, putting increasing pressure on the power grid. This op-ed explores how energy-efficient appliances, better technology and smarter planning can make cooling more affordable and sustainable across homes, hospitals, cold chains and data centres.

BY VANDANA MAJUMDAR



52

INDUSTRY REPORT

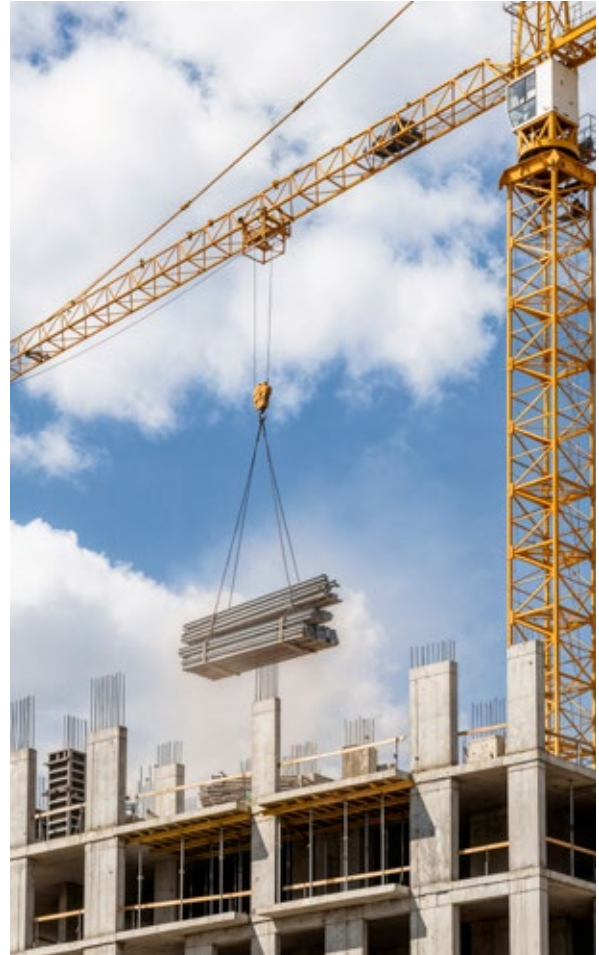
Recent energy crises have exposed the risks of relying on imported gas. This month's industry report examines how countries can protect supplies through diversified sources, flexible contracts, gas reserves and international cooperation, helping reduce price shocks and shortages during future disruptions.

BY IEA

Industry Events

70

A roundup of the major events and conferences shaping the energy sector across India, the Middle East, and ASEAN.



15

ENERSIDER INFRASTRUCTURE

Our infrastructure section tracks the developments shaping India's infrastructure landscape, from major projects and policy changes to investments and innovations. Covering 10 key sectors—including ports, railways, aviation, roads, construction, mining, urban transport, tunnels and bridges, and water and waste management—it highlights emerging trends and the leaders driving the nation's infrastructure growth.

SPOTLIGHT

7

CONTENTS

UPDATES FROM OUR STRATEGIC PARTNERS

Gain a global perspective on market-shaping developments. Featuring exclusive insights from international energy leaders, analysts, and experts, this section decodes what global shifts mean for India.



62

**Indian Biogas
Association**



54

**NetZero Energy
Transition
Association**



56

**Green Hydrogen
India**

INDUSTRY GRAPHICS

Coal Mid-Year Update 2026: Report By IEA

58

The IEA's Coal Mid-Year Update 2026 offers a data-led view of global coal consumption, production, trade and prices through 2027. As demand patterns diverge across regions, India and Southeast Asia remain key drivers of consumption, while shifting supply dynamics and price movements highlight the uncertainties shaping global coal markets.

STRATEGIC PARTNERS



Foreword

India's digital growth is moving at a staggering pace. From the rise of artificial intelligence to the expansion of data centres, the country is building the infrastructure needed to power its ambitions. But data centres need enormous amounts of electricity and water, and finding ways to meet these needs without putting further pressure on already stretched resources is becoming increasingly critical.

This month's cover story explores the water-energy nexus in data centre infrastructure, drawing on a TERI-Grundfos white paper to examine the challenges and opportunities ahead. In exclusive conversations, TERI Director General Dr Vibha Dhawan and Grundfos Country President, India, Usha Subramaniam, share their perspectives on efficient cooling, water reuse, better planning and the need for stronger industry collaboration. The message is clear: digital growth must go hand in hand with resource efficiency and resilience.

The conversation extends beyond data centres. As India's AI ambitions gather pace, our authored articles examine the need to establish clear priorities for AI infrastructure, strengthen digital public infrastructure and ensure that technological progress serves wider societal needs. In Enersider View, we turn to another growing pressure point: cooling. From homes and hospitals to cold chains and data centres, rising temperatures are making energy-efficient cooling an increasingly important part of India's development agenda.

This edition also looks at the vulnerabilities exposed by recent energy crises, with an industry report examining how countries can strengthen gas security through diversified supplies, flexible contracts and international cooperation. Our industry graphics track shifting global coal markets, while Beyond Boundaries brings developments from ASEAN, the Middle East and North Africa into focus.

Alongside these perspectives, we track key leadership appointments, policy developments and the infrastructure projects shaping India's growth. Across sectors, the underlying challenge remains the same: progress is not simply about building more, but about building better. As India's energy and infrastructure needs evolve, the choices we make today will determine how resilient, efficient and sustainable tomorrow can be.

Happy reading!

Vandana Majumdar



**This issue is for private circulation only. Digital copy available on our website.*

***Cover Credits: Enersider*

Know Us –

ENERSIDER Monthly is your gateway to the evolving energy landscape—offering in-depth coverage, sharp insights, and compelling stories across gas, renewables, and beyond. As India's leading energy magazine, it connects you to key developments, influential voices, and strategic trends, keeping you informed, empowered, and ahead of the curve.

Copyright©2026 Enersider Markets Media. All rights reserved. This title is registered trademark with the Trademark Registry, Government of India, New Delhi.

For queries: support@enersider.com

Website: www.enersider.com

LinkedIn: www.linkedin.com/showcase/enersider



ENERSIDER

OCTOBER 2026 . VOLUME 2 . ISSUE 10

Partner
Zeba Khan

Partner
Anand Gautam

Head of Content
Vandana Majumdar

Design Consultant
Mohd. Shariq Ansari

Photography
Bhuvan Chawla

Digital Support
Atalia Marketing

Executive Support
Shyla Majumdar

Print Support
CreativAge
Mahesh Pal

Accountant
Dheeraj Joshi

Founder's Note

At Enersider Markets Media, our vision has always been clear – to build a future-forward, premium media platform dedicated exclusively to the energy sector. As the industry undergoes rapid transformation, the need for credible insights, meaningful dialogue, and informed perspectives has never been greater.

Today, Enersider Markets Media stands as a 360-degree platform, bringing together multiple avenues of engagement. Through our monthly digital magazine, Enersider, our podcast, Signed-in with Enersider and our high-impact industry forums and networking platforms, designed to foster dialogue, we continue to spotlight the ideas, leaders, and innovations shaping the future of energy.

Building on the success of our flagship events—the Annual Business Conclave and the Future Energy Leaders Award Show, we are now gearing up to launch a series of sector-focused, niche forums. These upcoming engagements will be sharper in focus, deeper in insight, and richer in conversation. Stay tuned.

As India steps into a decisive decade for energy, we remain committed to connecting stakeholders, amplifying voices, and telling the stories that matter most.

Thank you for being part of this journey.

SIDDARTH GAUTAM

ADVERTISE WITH ENERSIDER



OCTOBER

2026

WATER-ENERGY NEXUS

AI, DATA CENTRES & THE
WATER-ENERGY EQUATION

NOVEMBER

2026

BEYOND COP

THE GLOBAL SOUTH'S
CLIMATE MOMENT

DECEMBER

2026

THE STATE OF ENERGY 2026

A YEAR OF TRANSFORMATION,
TRANSITION & TURBULENCE

JANUARY

2027

WHO WILL POWER INDIA?

FEBRUARY

2027

THE ENERGY BUDGET

MARCH

2027

SHENERGY WOMEN IN POWER

Special Rates For One Energy Club Members

#No. of Ads / Advertorials	Actual Price (INR)	Discount %	Revised Price (INR)
#12 - Qty	12 Lac	75%	3 Lac
#6 - Qty	6 Lac	66.66%	2 Lac
#3 - Qty	3 Lac	50%	1.5 Lac





BY VANDANA MAJUMDAR

India's energy conversation has conventionally revolved around one question: How much more power will we need? As the country gets hotter, urbanises rapidly and rushes towards its Net Zero targets, there is another question that deserves equal attention: How efficiently will we use that power to stay cool?

Cooling is quietly becoming one of the biggest drivers of electricity demand. The International Energy Agency (IEA) estimates that cooling contributed around 60 GW to India's peak electricity load in 2024. With air-conditioner use still relatively low in India, this demand is expected to grow sharply. By 2030, cooling could account for about a third of the country's peak electricity demand, reaching nearly 140 GW.

India's peak power demand reached a record 270.8 GW on May 21, 2026, as a severe heatwave pushed up the use of air conditioners, coolers and other appliances. Business Standard reported that power consumption in May rose 11.55% year-on-year, while peak demand jumped sharply from the previous year.

However, this is not simply about more people buying ACs; it is much bigger. Much of India's cooling demand is hidden from everyday view.

Hospitals need controlled temperatures for patients, medicines and medical equipment. Food retailers rely on refrigerators and freezers. Warehouses require temperature-controlled environments.

Cold chains keep fruits, vegetables, dairy, meat and pharmaceuticals within safe temperature ranges as they move from farm to consumer. Data centres, meanwhile, need continuous cooling to prevent increasingly powerful computing equipment from overheating.

A recent Ministry of Food Processing Industries assessment estimated the country's cold-storage capacity at around 37 – 40 million tonnes, with a shortfall of 10 –15 million tonnes. The report also pointed to major differences between regions and gaps in cold storage, refrigerated transport and rural connectivity.

Cooling, therefore, is not just a comfort issue. It is tied to food security, healthcare, logistics, manufacturing and the digital infrastructure.

The energy challenge is just as important. Cold chains use a lot of energy because refrigeration, storage and transport all require continuous power. The National Centre for Cold Chain Development has explicitly highlighted the need for more energy-efficient systems, better technology and modern infrastructure to reduce this load.

Data centres add another layer to this challenge. As India expands its digital infrastructure and AI capabilities, the demand for data centres is rising quickly. The Ministry of Power estimates that AI data centres alone could add 26.3 GW to India's electricity demand by 2031–32. The Indian Express has also reported that electricity demand from data centres could grow 20 times from 2025 levels by 2040.

But data centres do not simply consume electricity to run servers. Those servers generate enormous amounts of heat, which must be removed continuously.

As Business Standard recently noted, India's AI infrastructure race is simultaneously a race to build electricity networks and cooling systems. More advanced computing also means more cooling to prevent overheating.

COOL UNDER PRESSURE

This creates an important paradox. India needs digital infrastructure to support economic growth, but the infrastructure supporting that digital economy must itself become more energy- and resource-efficient.

Cooling demand rises when temperatures rise. Unfortunately, those are often the same periods when the power system is under its greatest stress. The IEA estimates that every 1°C increase in India's daily average temperature was associated with more than 7 GW of additional peak electricity demand in 2024. Without further efficiency improvements, this could rise to around 12 GW per degree by 2030.

Another challenge is the timing of cooling demand. India is adding solar power rapidly, but cooling needs often remain high after sunset, especially as nights get warmer. In June 2026, the IEA noted that rising cooling demand was putting greater pressure on the grid at night, when solar power is no longer available.

As former Power Secretary Anil Razdan told The Indian Express, "Solar is fundamentally a daytime source of energy." If India wants reliable power around the clock, the newspaper reported, renewable generation will need to be complemented by storage or other flexible sources.

This makes batteries, pumped storage and thermal energy storage increasingly relevant to the cooling conversation.

Nevertheless, storage and additional generation cannot be the only answer. Better insulation, natural ventilation, reflective materials, cool roofs and smarter building design can keep spaces cooler and reduce the need for air-conditioning.

Delhi offers a clear example. A 2025 study by the Centre for Science and Environment found that heat and cooling demand account for 67% of the changes in the city's peak electricity demand. The study recommended better building standards, improved cooling, more green spaces and water bodies to help keep the city cooler.

The government already recognises this belief. The India Cooling Action Plan, launched in 2019, aims to reduce cooling demand by 20 - 25% and cooling-related energy use by 25 - 40% by 2037-38.

The Bureau of Energy Efficiency (BEE) has also set efficiency standards for appliances such as air-conditioners, fans and refrigerators, along with guidelines for more energy-efficient buildings.

The challenge now is implementation and scale. India's cooling future cannot be built around selling more air-conditioners and then adding power plants to run them.

It requires a layered approach: more efficient appliances, better buildings, stronger cold chains, smarter HVAC systems, efficient data-centre cooling, district cooling where appropriate, energy storage, smarter power use and better city planning.

Affordability must be at the centre of this transition. Efficient cooling cannot become a luxury available only to those who can afford the latest equipment. As temperatures rise, safe and affordable cooling will become increasingly important for people's health and ability to work.

India has spent years asking how much electricity it needs to generate. That question will remain important. But the next phase of the energy transition demands another one.

How much cooling do we actually need and how efficiently can we deliver it?

India does not just need more cooling. It needs a smarter way to cool – one that keeps people comfortable without putting unnecessary pressure on the grid.

The Newsmaker

BY ENERSIDER DESK

Manoj Kumar Sharma took charge as Director (Projects), GAIL (India) Limited, on September 19, 2026. He brings over three decades of experience in the oil and gas and hydrocarbon infrastructure sector. His appointment comes as GAIL continues to expand its infrastructure and explore new energy opportunities. He has also been appointed as an Additional Director on the GAIL board

Sharma joins GAIL from Indian Oil Corporation Limited (IOCL), where he was Executive Director and Regional Head, Eastern Region Pipelines. In this role, he was responsible for operations and maintenance, construction and City Gas Distribution (CGD) activities across five states, overseeing a pipeline network of more than 5,700 km. Before this, he served as Executive Director (Projects) in IOCL's Pipelines Division, where he handled engineering, procurement and construction management for major oil, LPG and natural gas pipeline projects in India and overseas.

His career spans design, engineering, project management, construction, and operations in the hydrocarbon sector. He has worked on crude oil, petroleum products, LPG and natural gas pipeline networks, as well as major crude oil terminal projects. He has also served as an IOCL nominee director on the boards of GSPL India Transco, GSPL India Gasnet and Kochi Salem Pipeline.

Sharma holds a master's degree in mechanical engineering, specialising in Production and Industrial Engineering, from Delhi College of Engineering and a Post Graduate Diploma in Business Management from Xavier Institute of Management, Bhubaneswar.

At GAIL, Sharma takes charge as the company continues to strengthen its position as a major natural gas infrastructure player. The company expanded its natural gas pipeline network to around 18,700 km in FY2025-26, with roughly 2,000 km of pipelines commissioned during the year. Its share of India's natural gas transmission network stands at around 65%.

GAIL has planned a capital expenditure of around ₹11,500 crore for FY2026-27, covering pipelines, petrochemicals, renewables, exploration and production, and CGD projects. Sharma's experience in large-scale projects and pipeline operations will support GAIL as it continues to expand its infrastructure and diversify its energy portfolio.

STRENGTHENING THE GAS GRID

MANOJ KUMAR SHARMA

Director (Projects)
GAIL (India) Limited



image source: GAIL (India)

The Newsmaker

BY ENERSIDER DESK

Akhilesh Pathak has assumed charge as Director (Projects) of Power Grid Corporation of India Limited (POWERGRID) with effect from September 30, 2026. His appointment, approved by the Ministry of Power, is effective until his superannuation on May 31, 2028, or until

further orders. With Pathak taking charge, Chairman and Managing Director Burra Vamsi Rama Mohan relinquished the additional charge of Director (Projects) that he had been holding.

A graduate in Electrical & Electronics Engineering from Mangalore University, Pathak joined POWERGRID in 1993 as part of its first batch of Executive Trainees. Over the past three decades, he has worked across key areas including transmission planning, project execution, business development and infrastructure development. He has also held roles in Commercial, PESM, Business Development and Joint Ventures, as well as consultancy.

Before joining the Board, Pathak served as Executive Director, Project Management, where he oversaw the development, execution and commissioning of Extra High Voltage (EHV) transmission lines and substations.

During his tenure, he helped POWERGRID achieve high levels of capital expenditure, asset capitalisation, and transmission-line additions. He also led the Arun-3 SAPDC Transmission Project in Nepal and played a role in expanding POWERGRID's consultancy business in India and overseas.

Pathak's appointment comes as POWERGRID continues to expand its transmission network to support India's growing renewable-energy and grid-infrastructure needs. In FY2025-26, the company recorded its highest-ever annual capital investment of ₹39,967 crore.

It also commissioned 10 transmission projects, adding 5,772 circuit kilometres of transmission lines and 72,055 MVA of transformation capacity. Its transmission-system availability stood at 99.84%.

The organisation has also been expanding beyond its traditional transmission portfolio, securing its first Battery Energy Storage System project, commissioning an 85 MW solar plant in Madhya Pradesh and establishing an SPV in Kenya for a transmission project. As Director (Projects), Pathak will oversee POWERGRID's growing transmission, renewable-energy and storage projects.

SHAPING INDIA'S POWER GRID

AKHILESH PATHAK

Director (Projects),
Power Grid Corporation of India Limited
(POWERGRID)



image source: POWERGRID

13

THE NEWSMAKER

The Newsmaker

BY ENERSIDER DESK

W

With over three decades of experience in oil and gas, Bhaskar Chowdary Nettem has taken charge as Director (Production) at ONGC. He assumed office on September 21, 2026, bringing extensive experience in offshore

and onshore operations, production, project execution and international upstream activities.

A Mechanical Engineer with a master's degree in international business, Nettem joined ONGC in 1991 as an Assistant Executive Engineer at Mumbai High. This early stint gave him hands-on experience in offshore production and field operations. Over the years, he took on a range of responsibilities across ONGC, including greenfield refinery feasibility studies at Kakinada and Barmer. He was also involved in the development of the Mangala oilfields joint venture in Rajasthan and the commissioning of the Barmer-Bhogat heated crude oil pipeline.

Nettem brings international experience from his time with ONGC Videsh Limited, where he worked on deepwater operations, business development and field planning. He later served as Asset Manager of ONGC's Assam Asset, overseeing production from mature fields. At Mumbai High, he worked on production improvement, asset integrity, field redevelopment and project execution. He is also Chairman of Indradhanush Gas Grid Limited, which is developing the 1,656-km Northeast Gas Grid connecting the eight North-Eastern states to the national gas network.

Nettem takes charge as ONGC focuses on maintaining production from mature fields while expanding exploration and deepwater projects. In FY2026, ONGC and its joint ventures produced 40.46 million tonnes of oil and gas equivalent. The company accounts for around 73% of India's crude oil production and 57% of its natural gas production. Its overseas arm, ONGC Videsh, has interests in 29 oil and gas projects across 14 countries.

With a career built around field operations, production and project execution, Nettem brings broad operational experience to the production portfolio. His new role will place him at the centre of ONGC's efforts to maintain output from existing assets while advancing new exploration and production opportunities.

NAVIGATING THE UPSTREAM SECTOR

BHASKAR CHOWDARY NETTEM

Director (Production),
ONGC



image source: ONGC

ENERSIDER INFRA NEWS

As India accelerates its journey towards becoming a globally competitive economy, infrastructure development continues to play a central role in supporting growth and connectivity. This section provides a comprehensive perspective on the sectors and initiatives defining India's infrastructure ecosystem. Spanning ports, railways, aviation, roads, construction, mining, urban mobility, tunnels and bridges, and water and waste management, it examines the key projects, emerging business opportunities, policy developments, and technological advancements influencing the sector. With a focus on progress, innovation, and execution, it captures the trends and challenges across the sector.





AVIATION

01

Mumbai airport to cut 265 weekly international flights from October 25

2 OCTOBER 2026 | PTI

Mumbai airport is set to reduce 265 weekly international flights from October 25 as preparations begin for the redevelopment of Terminal 1. The cuts will affect 46 airlines, including IndiGo, Air India, Akasa Air, Air India Express and SpiceJet. IndiGo and Air India are expected to lose 74 and 33 weekly international services respectively. Airlines have raised concerns about the proposed transition and the shifting of some operations to Navi Mumbai International Airport.

02

IndiGo raises fuel surcharge as ATF prices climb

5 OCTOBER 2026 | PTI

India's largest airline IndiGo announced higher fuel surcharges on both domestic and international flights from 6 October, citing rising aviation turbine fuel (ATF) prices. The domestic surcharge ranges from ₹100 to ₹350 depending on flight distance, while international fares will also see an increase.

03

Delhi to host Routes Asia 2027 as India targets 400 operational airports by 2047

29 SEPTEMBER 2026 | PIB

The government announced that Routes Asia 2027 will be held in New Delhi from 16–18 March 2027, with more than 115 airlines and representatives from over 55 countries expected to participate. Civil Aviation Minister Ram Mohan Naidu said India aims to increase annual passenger traffic from around 24 crore today to 130 crore by 2047, while expanding the number of operational airports from 165 to 400.

04

Embraer looks to Mahindra and Adani for deeper India presence

27 SEPTEMBER 2026 | ANI

Brazilian aircraft manufacturer Embraer is looking to deepen its presence in India through partnerships with Mahindra Group and Adani Group. The Mahindra partnership is linked to India's proposed 60-aircraft Multi-Role Transport Aircraft programme, while Embraer is also looking at India for its civil aircraft business, supply chain and MRO ecosystem.



RAILWAYS

01

Katra–Banihal rail section cleared for 100 kmph operations

2 OCTOBER 2026 | PTI

A Vande Bharat train successfully crossed the Chenab Rail Bridge and Anji Bridge at 100 kmph, after the maximum permissible speed on the 111-km Katra–Banihal section was raised from 75 kmph to 100 kmph. The milestone is significant for the Udhampur–Srinagar–Baramulla Rail Link (USBRL) and marks a move towards faster, higher-capacity passenger connectivity to Kashmir.

02

₹223-crore Kavach 4.0 project approved for 614.75 route km

28 SEPTEMBER 2026 | PIB

Indian Railways approved a ₹223-crore project to deploy Kavach 4.0 across 614.75 route km of the Varanasi Division of Northeastern Railway. The project will integrate the system with existing signalling and train-control infrastructure rather than requiring new railway lines or stations.

03

Indian Railways approves two MEMU services and new passenger connections

29 SEPTEMBER 2026 | PIB

Indian Railways approved two MEMU services connecting Meerut City with Khurja and Saharanpur, alongside several new and extended services during the period. The approvals are part of continued efforts to strengthen regional and suburban passenger connectivity.

04

AI-based technology helps save 255 elephants from train collisions

4 OCTOBER 2026 | PTI

Northeast Frontier Railway reported that 255 elephants were saved from train collisions between January and September 2026 through technology-driven monitoring and coordination with forest authorities. The measures include an AI-based Intrusion Detection System using Distributed Acoustic Sensing, which generates real-time alerts when elephants approach vulnerable railway stretches.



PORTS & SHIPPING

01

Dhamra Port becomes India's first large private multi-cargo port to run fully on renewable power

27 SEPTEMBER 2026 | PTI

Adani Ports and Special Economic Zone's Dhamra Port in Odisha has shifted its entire electricity consumption to renewable power, making it India's first large-scale private multi-cargo port to operate fully on renewable electricity. The port consumes more than 90 lakh units of electricity a month, with annualised renewable consumption exceeding 108 GWh. Renewable electricity now supports its cargo handling, storage, rail-linked operations and other infrastructure.

02

India launches first international cargo voyage from Dibrugarh

5 OCTOBER 2026 | PIB

India launched its first-ever international cargo voyage from Dibrugarh, with a consignment of methanol travelling from Bogibeel Terminal to Pangaon Port in Dhaka through National Waterway-2 and the Indo-Bangladesh Protocol Route. The move opens a new river-based trade route for Assam and strengthens connectivity between India's Northeast and Bangladesh.

03

₹2,300-crore e-methanol plant to come up at Kandla

26 SEPTEMBER 2026 | PIB

India has begun work on its first port-based e-methanol production facility at Deendayal Port in Kandla. The ₹2,300-crore project, a joint initiative of Deendayal Port Authority and Assam Petro-Chemicals Ltd, will eventually produce 150 tonnes of e-methanol per day. The facility will use renewable power, water and biogenic CO₂ to produce green fuel for ships operating along the Asia-Europe trade corridor. Phase I, with 50 tonnes/day capacity and ₹1,200 crore investment, is targeted for January 2027, followed by Phase II.

04

Jawahar Dweep becomes India's first plastic-free oil terminal

2 OCTOBER 2026 | PIB

Mumbai Port Authority has declared Jawahar Dweep Marine Oil Terminal plastic-free, making it India's first oil terminal to achieve the status. The initiative forms part of the port's wider effort to reduce single-use plastic and improve waste management across its operations. The port also dedicated its Oil Spill Response (OSR) facilities under the same programme, strengthening its environmental response infrastructure.



ROADS & HIGHWAYS

01

NHAI introduces barrierless tolling in Tamil Nadu

1 OCTOBER 2026 | PIB

NHAI has rolled out Tamil Nadu's first Multi-Lane Free Flow (MLFF) tolling system at Paranur on the Tambaram-Tindivanam section of NH-179B. Vehicles can pass through without stopping, using FASTag and Automatic Number Plate Recognition (ANPR). The system is expected to reduce congestion, fuel consumption, emissions and human intervention at toll plazas.

02

NHAI orders special quality checks on 17 highway projects

30 SEPTEMBER 2026 | PIB

NHAI has ordered special quality inspections of 17 under-construction highway projects where bids were more than 15% below the estimated project cost. The projects, each worth over ₹500 crore and at varying stages of construction, will undergo additional technical checks to identify quality or construction deficiencies. The move comes amid increasing scrutiny of whether aggressive low-cost bidding can affect highway quality and durability.

03

FASTag Annual Pass crosses one crore users

28 SEPTEMBER 2026 | PIB

The FASTag Annual Pass has crossed one crore passes issued since its August 2025 launch. The pass covers around 1,150 National Highway and National Expressway fee plazas and costs ₹3,075 for one year or 200 toll crossings for eligible non-commercial vehicles. This milestone points to the growing adoption of digital tolling and cashless highway travel, particularly among private vehicle users.

04

Dilip Buildcon emerges L-1 bidder for ₹688-crore Solapur elevated corridor

28 SEPTEMBER 2026 | PTI

Dilip Buildcon Ltd (DBL) emerged as the lowest bidder for an NHAI project worth ₹688.23 crore to construct a four-lane elevated corridor on NH-65 in Solapur, Maharashtra. The project will run for about 9.66 km, from Old Pune Naka to Boramani Naka, and will be executed under the Hybrid Annuity Model (HAM). The project is expected to take 24 months to construct, followed by a 15-year operation period.



TUNNELS & BRIDGES

01

First steel bridge for Mumbai–Ahmedabad Bullet Train project launched in Maharashtra

28 SEPTEMBER 2026 | PIB

A 100-metre-long, 1,405-tonne steel bridge was launched over NH-3 at Dive-Anjur in Bhiwandi, Maharashtra, for the Mumbai–Ahmedabad Bullet Train project. The bridge was fabricated in Trichy, Tamil Nadu, transported around 1,300 km to Maharashtra and assembled at the project site. It is the first steel bridge completed for the Bullet Train project in Maharashtra.

02

Chennai Metro achieves three TBM breakthroughs in three days

1 OCTOBER 2026 | PTI

Chennai Metro Phase II recorded three Tunnel Boring Machine (TBM) breakthroughs in three consecutive days, marking a major push in underground construction. The breakthroughs took place at Kilpauk Medical College, Villivakkam and RK Salai across Corridors 3 and 5. One of the drives involved a 915-metre tunnel between Royapettah and RK Salai, completed in 277 days under challenging urban conditions.

03

Chenab and Anji bridges inspected as Kashmir rail connectivity advances

2 OCTOBER 2026 | PTI

Railways Minister of State V. Somanna inspected the Chenab and Anji railway bridges on the Katra–Banihal section of the Udhampur–Srinagar–Baramulla Rail Link (USBRL). The inspection covered the 359-metre-high Chenab Bridge, the world's highest single-arch railway bridge, and Anji Bridge, India's first cable-stayed railway bridge. The bridges form a critical part of the rail link aimed at providing seamless rail connectivity between the Kashmir Valley and the rest of India.

04

480-metre Sabarmati River bridge completed for Bullet Train project

3 OCTOBER 2026 | ANI

A 480-metre-long bridge over the Sabarmati River has been completed for the Mumbai–Ahmedabad High-Speed Rail project. Located between the Sabarmati and Ahmedabad bullet train stations, the bridge stands around 36 metres above ground and crosses a complex area with existing railway infrastructure and other transport corridors.



WATER AND WASTE MANAGEMENT

01

Goa strengthens implementation of Solid Waste Management Rules 2026

2 OCTOBER 2026 | PIB

Goa has identified 412 bulk waste generators, all reported registered on the CPCB portal, and is implementing four-way source segregation covering wet, recyclable, sanitary and special-care waste. The state also has 14 Reduce-Reuse-Recycle centres.

02

Used wastewater increasingly treated as a resource under SBM-U

30 SEPTEMBER 2026 | PIB

The government is pushing Used Water Management, with STPs enabling treated wastewater to be reused for irrigation and industrial applications. Under SBM 2.0, ₹11,785 crore has been approved for STPs in small cities, adding around 4,900 MLD of treatment capacity.

03

Waste-to-energy and biogas projects gain momentum under SBM-U 2.0

27 SEPTEMBER 2026 | PIB

The government highlighted projects converting organic waste into biogas, bio-CNG, electricity and manure. Examples include a multi-feedstock bio-CNG plant in Prayagraj and biogas-based cooking at an educational campus in Gujarat, showing the shift from waste disposal to energy and resource recovery.

04

India International Water Week focuses on climate-resilient water management and digital innovation

24 SEPTEMBER 2026 | PIB

The 9th IIWW brought together government, industry, researchers and innovators around climate-resilient water systems, digital solutions, sustainable WASH, water infrastructure and innovative financing. The accompanying WASH conference also brought representatives from 22 African countries together with Indian stakeholders.



URBAN TRANSPORT

01

Cabinet approves Integrated Transport & Logistics Authority (ITLA)

6 OCTOBER 2026 | PIB

The Union Cabinet approved the creation of the Integrated Transport & Logistics Authority (ITLA) as a Special Purpose Vehicle (SPV) to improve coordination across transport ministries and agencies. It will focus on integrated planning, project appraisal, monitoring, policy support and data analytics, with an emphasis on multimodal integration. While broader than urban mobility, the move could have implications for integrated urban and regional transport planning.

02

PM E-DRIVE: 14,000 e-buses allocated, 13,800 for seven cities

1 OCTOBER 2026 | PIB

The government highlighted the progress of the PM E-DRIVE scheme, under which ₹4,391 crore has been allocated for 14,028 e-buses. Of these, 14,000 have been allocated, with 13,800 earmarked for Delhi, Bengaluru, Hyderabad, Mumbai, Ahmedabad, Pune and Surat. The scheme has also approved ₹851 crore for 8,147 EV chargers across three oil marketing companies and 10 states.

03

Switch Mobility bags order for 840 electric buses for Delhi

28 SEPTEMBER 2026 | PTI

Switch Mobility, the Hinduja Group's electric mobility arm, secured an order for 840 electric buses from Antony Road Transport Solutions under the first phase of PM E-DRIVE. The order comprises 420 nine-metre and 420 twelve-metre AC electric buses, which will be deployed with the Delhi Transport Corporation and Delhi Transport Department.

04

India's urban EV push gains scale through PM E-DRIVE

1 OCTOBER 2026 | PIB

The latest government assessment shows that 26.59 lakh EVs had been sold under PM E-DRIVE as of June 2026, against an incentive-supported target of around 28.30 lakh vehicles. The scheme has also earmarked ₹2,000 crore for public EV charging infrastructure and has been extended until March 2028.



METALS AND MINING

01

India's steel sector records steady H1 growth; prices and consumption rise

6 OCTOBER 2026 | PIB

India produced 85.1 million tonnes of crude steel in April–September 2026, up 2.9% year-on-year. Finished steel production rose 3.7% to 81.8 MT, while finished-steel consumption increased 7.5% to 84.9 MT. Steel prices also rose sharply in September, with TMT prices up 12.6% month-on-month. The Ministry also announced a Steel Industry Safety Council, while NMDC commissioned its 2 MTPA Nagarnar pellet plant as part of its ₹5,427-crore integrated iron-ore processing project.

02

Jammu & Kashmir auctions two mineral blocks, opening a new phase of mining development

2 OCTOBER 2026 | PIB

For the first time, two mineral blocks in Jammu & Kashmir were successfully auctioned under the Central Government's mineral auction process. The move is intended to unlock the UT's mineral potential and bring more organised exploration and development into the region.

03

India launches auction of offshore mineral blocks in Andaman Sea

1 OCTOBER 2026 | PIB

The government launched the auction of two offshore mineral blocks — Sewell Rise-01 and West Sewell Ridge-01 — covering more than 1,632 sq km in the Andaman Sea. The blocks contain polymetallic nodules and crusts containing cobalt, nickel, manganese, copper and rare earth elements. The move is particularly important for India's critical-mineral security, as these minerals are essential for EVs, renewable energy, electronics and strategic industries.

04

Coal India expands into critical minerals, advanced materials and clean-energy technologies

20 SEPTEMBER 2026 | PIB

Coal India Limited is expanding beyond conventional coal mining into critical minerals, advanced materials, coal gasification, renewables, energy storage and diversified minerals such as iron ore. Its diversification portfolio includes around ₹69,346 crore across four coal-to-chemicals projects, about 550 MW of commissioned solar capacity, battery energy-storage initiatives and opportunities in critical minerals and downstream materials.



01

First international cargo voyage from Dibrugarh to Bangladesh

4 OCTOBER 2026 | PIB

The government announced the first international cargo voyage from Dibrugarh to Dhaka, carrying methanol produced by Assam Petro-Chemicals. The cargo is moving through National Waterway-2 on the Brahmaputra and the Indo-Bangladesh Protocol Route, linking Assam with Bangladesh's Pangaon Port.

02

Government extends RELIEF support amid West Asia logistics disruptions

2 OCTOBER 2026 | PIB

The government extended the operational timelines of RELIEF (Resilience & Logistics Intervention for Export Facilitation) to support exporters facing higher freight, insurance and war-related risks caused by disruptions in the Gulf and wider West Asia. The scheme provides 95% ECGC risk coverage for eligible shipments, including FCL, LCL and reefer containers.

03

Balmer Lawrie plans ₹500 crore logistics-led capex expansion

21 SEPTEMBER 2026 | PTI

PSU Balmer Lawrie & Co. plans nearly ₹500 crore in capex over three years, with a major focus on logistics. Around ₹200-250 crore is earmarked for railway logistics, while ₹50-60 crore will go towards expanding its 3PL operations and cold-chain facilities. The company plans to increase its railway logistics fleet from three to around 15 rakes, while developing a hub-and-spoke 3PL network centred on Dankuni, with spokes towards Siliguri, Guwahati and Bhubaneswar.

04

Indian port volumes rise 7%; global container freight rates surge 132%

23 SEPTEMBER 2026 | ANI

India's port volumes increased 7% year-on-year in August, while global container freight rates had risen 132% from February levels, amid Middle East tensions, early peak-season shipments and front-loading ahead of China's Golden Week. Private operator Adani Ports recorded a 19% YoY increase in August volumes, while Indian Railways' container volumes fell 3% YoY. Road freight tariffs also rose 2% month-on-month in early September, while M&HCV registrations were up 40% YoY.

CONSTRUCTION MACHINERY AND EQUIPMENT

01

BEML unveils India's first indigenous 60-ton electric dump truck for mining

30 SEPTEMBER 2026 | PIB

BEML unveiled the BH60-EV, described by PIB as India's first indigenously designed and developed 60-ton electric dump truck for mining and infrastructure applications. The vehicle has zero tailpipe emissions and is designed for high-capacity mining operations. BEML estimates 40–60% lower operating costs compared with conventional diesel-powered equipment and an annual reduction of around 130 tonnes of CO₂ per vehicle, depending on operating conditions.

02

Bauma CONEXPO INDIA 2026 showcases next-generation construction & mining equipment

22 SEPTEMBER 2026 | ANI

The major construction and mining equipment exhibition opened in Greater Noida with 1,100+ exhibitors across 1.45 million sq ft. The event brought together equipment manufacturers, infrastructure companies and technology providers, with strong emphasis on machinery innovation and the future of construction and mining.

03

Microvast to showcase battery technology for construction & mining equipment

17 SEPTEMBER 2026 | PTI

Microvast Power announced battery solutions specifically for construction machinery, mining vehicles and heavy-duty applications at bauma CONEXPO INDIA. Its latest C-pack and MT-pack systems target longer operating cycles and reduced charging downtime, highlighting the shift toward electrification of heavy equipment.

04

BharatBenz expands North India service infrastructure — 30 Sept 2026

30 SEPTEMBER 2026 | PTI

Daimler India Commercial Vehicles, through its BharatBenz brand and dealer PPS Trucking, opened a new 75,000 sq ft 3S facility in Gorakhpur, with 11 service bays, advanced diagnostic equipment, genuine spare-parts inventory and mobile service vans. It is particularly relevant to heavy-equipment servicing, maintenance infrastructure and fleet uptime.

Q

Dr Vibha Dhawan, Director General of The Energy and Resources Institute (TERI), brings decades of experience in research, policy and sustainable development to the evolving data-centre landscape.

In this exclusive interview with Enersider, she discusses the growing water-energy nexus underpinning India's digital infrastructure and highlights the need for integrated resource planning, efficient cooling, performance metrics and stronger coordination to build a more resilient and sustainable data-centre ecosystem.

DR VIBHA DHAWAN

Director General, TERI

TERI has been studying India's energy, environment and resource challenges for decades. What led you to identify the data centre sector as an area requiring deeper attention from a water and energy sustainability perspective?

Globally, data centres have become a strategic infrastructure issue at the intersection of digital growth, power systems, and industrial policy. AI-focused data centres are expected to grow much faster than the sector average, while AI is also changing load characteristics: AI server power density increased eleven-fold between 2020 and 2025 and could rise by a further 4 times by 2027. These shifts are already reshaping power procurement, with the tech sector accounting for around 40% of all corporate renewable PPAs signed in 2025. These trends are increasing pressure on power supply, grid connectivity, cooling systems, and capital deployment.

There is often a tendency to assess sustainability through individual metrics such as energy consumption, emissions or water use. What does TERI believe is missing when these resources are assessed separately rather than as an interconnected system?

Current policy and regulatory frameworks for data centres have successfully promoted investment in the sector but largely address energy, water, land, and infrastructure planning independently. Existing national and state policies focus primarily on investment facilitation, fiscal incentives, and ease of doing business, while sustainability considerations remain fragmented across multiple regulations.



Although energy efficiency provisions exist through building codes and equipment standards, no comprehensive framework currently integrate operational energy efficiency, water use, cooling technologies, resource availability, and regional planning into a unified governance approach. Examining India's rapidly expanding data centre sector through the lens of the water-energy nexus, highlights how decisions regarding cooling technologies, facility location, electricity sourcing, and water management collectively determine long-term sustainability outcomes.

Data centres are a relatively new area of infrastructure compared with sectors such as power, industry and transport. What findings from TERI's work across these sectors are particularly relevant to the data centre industry?

India is now entering this scale-up phase where its data-centre sector is becoming increasingly significant for energy and infrastructure planning. The country hosts around 150 data-centre assets while generating about 20% of the world's data.

The draft National Data Centre Policy notes that installed capacity increased from about 350 MW in 2019 to about 1,030 MW in 2024, is expected to reach about 2 GW by 2027, and aims to facilitate over 4 GW of IT load by 2030.

Looking further ahead, NITI Aayog's 'Scenarios Towards Viksit Bharat and Net Zero' study projects data-centre IT load rising to 4 GW by 2030, 65 GW by 2047, and 105 GW by 2070, with electricity demand reaching about 394 TWh by 2047 and 700 TWh by 2070. TERI's estimates point to an even steeper electricity demand trajectory, rising from 48.8 TWh in 2030 to 237.1 TWh in 2047, and 1,123.8 TWh by 2070. Data centres are therefore becoming a significant long-term load for the power system and a growing planning variable for infrastructure, land, and resource use.

The white paper by TERI-Grundfos looks at interlinkages between water and energy in data centre infrastructure. What gaps in the current sustainability conversation does the paper seek to address?

The sustainability conversation around data centres often focuses on energy consumption and carbon emissions, while water receives comparatively less attention. This paper highlights that water and energy are deeply interconnected, particularly in cooling systems that are critical to data-centre performance.

By examining both resources together, the paper encourages a more holistic approach to infrastructure planning and operations. It also brings attention to metrics such as Water Usage Effectiveness (WUE) alongside Power Usage Effectiveness (PUE), helping stakeholders better understand resource efficiency. Ultimately, the paper aims to support informed decision-making that strengthens both sustainability outcomes and long-term operational resilience.

Looking beyond the recommendations in this paper, what areas of the data centre-resource nexus does TERI believe require further research or policy attention?

Our analysis suggests that the expansion of India's data centre sector should be viewed as a strategic growth element, but its expansion should focus on aligning future capacity with regional resource availability, promoting climate-appropriate cooling technologies, improving operational efficiency, increasing transparency through performance metrics, and strengthening coordination between energy, water, and urban planning institutions.

Learnings from other economies indicate that countries are increasingly integrating resource efficiency into data centre policies through performance benchmarking, disclosure requirements, water stewardship, and long-term infrastructure planning.



ENERSIDER

WATER-ENERGY NEXUS

IN DATA-CENTRE INFRASTRUCTURE

Behind India's accelerating digital transformation lies a less visible challenge – keeping the data centres powering it cool, connected and resource-efficient. Every AI query, cloud service and digital transaction relies on physical infrastructure with a growing appetite for power and water. As data centres scale to support the country's AI-driven future, the question is no longer simply how much computing capacity India can build, but how sustainably it can power and cool it. With nearly three-quarters of India's operating data centres located in water-stressed regions, the connection between digital growth, energy demand and water security is becoming impossible to ignore.

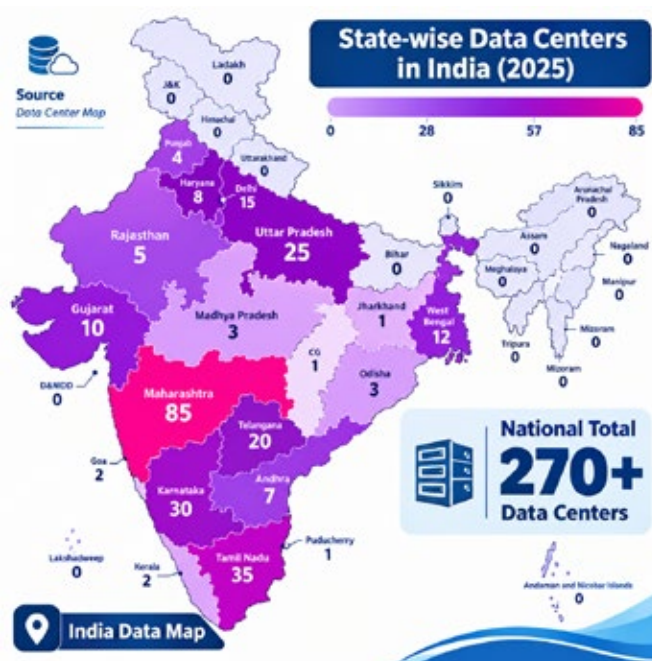
This October, ENERSIDER explores this emerging water-energy nexus through a new White Paper co-authored by leadership from TERI and Grundfos India. It examines the resource footprint of India's rapidly digitalising economy—from electricity and cooling to water consumption, siting and policy—and asks a defining question: Can India build the AI-ready infrastructure it needs without compromising the resources it depends on? The answer could shape not only the future of data centres, but the sustainability of India's digital transformation.



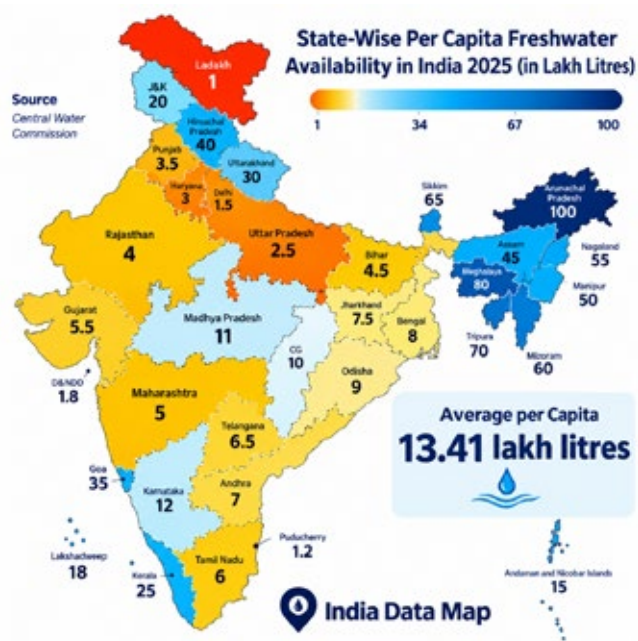
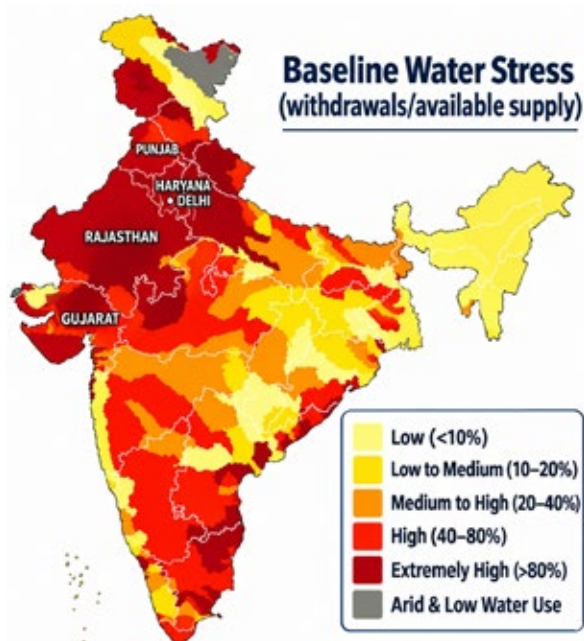
Can India Build AI-Ready Digital Infrastructure While Strengthening Water And Energy Resilience?

Every time someone sends an email, makes a UPI payment or asks an AI chatbot a question, the request is processed on servers in a data centre: a large, secure building full of computers that store and process data around the clock. These machines run on electricity without a break and give off heat, so every facility also needs cooling, and in a hot country cooling often means water. This is why data centres are sized in megawatts (MW) of power rather than square feet: power and cooling set the limit on how much computing a facility can hold.

India's data centre sector is growing faster than at any point in its history. Digital services, cloud computing, artificial intelligence (AI) and supportive state policies have drawn large investments into what was until recently a niche market. Installed co-location capacity has roughly tripled since 2020 to about 1.5 gigawatts (GW) in 2025 and is expected to reach about 6.5 GW by 2030. The Ministry of Electronics and Information Technology (MeitY), in a written reply to the Rajya Sabha in March 2026, estimated that electricity demand from data centres could reach 13.56 GW by 2031-32.



This growth is taking place in a country with limited water. India has about 18% of the world's population but only about 4% of its freshwater, and nearly three-quarters of its operating data centres are in water-short regions. The leading host states (Maharashtra, Tamil Nadu, Karnataka, Uttar Pradesh and Telangana) already rank high to extremely high on baseline water stress. Planning for the sector's growth therefore also means planning for the power and water it will need.



Estimates of the sector's size vary widely. Installed capacity grew from roughly 375-520 MW in 2020 to about 1.4-1.5 GW in 2025, although one market estimate puts 2025 capacity at 4.48 GW, rising to 15.21GW by 2031.

MeitY's 13.56 GW figure refers to expected electricity demand, and press reports in July 2026 said the Ministry of Power had identified a further 26.3 GW of AI-specific grid load, based on projects submitted by states.

These figures measure different things (installed capacity, demand and additional load) across projects at different stages, so they should not be averaged or used interchangeably.

The direction, however, is clear: capacity additions more than doubled in 2025 alone, and over half of India's operating facilities are in Maharashtra, Tamil Nadu and Karnataka.

Electricity use follows the same pattern. Data centres use about 0.5% of India's electricity, and the International Energy Agency (IEA) expects this to reach 1-2% within the decade. Annual consumption of 8-9 terawatt-hours (TWh) could rise to 57-80 TWh by 2030. The kind of load is also changing.

A conventional server rack draws 5-10 kilowatts (kW) and can be air cooled, while racks built for AI now commonly draw 40-100 kW or more. Cooling therefore becomes the main limit on computing density.

Power Usage Effectiveness (PUE) measures the overhead: total facility energy divided by IT equipment energy, so 1.0 would mean none. Indian facilities average around 1.5, from 1.3-1.4 in new hyperscale sites to 1.8 or higher in older ones, against a global best practice of 1.1-1.2. Since 2024, MeitY tenders for AI cloud infrastructure have required a PUE below 1.35.

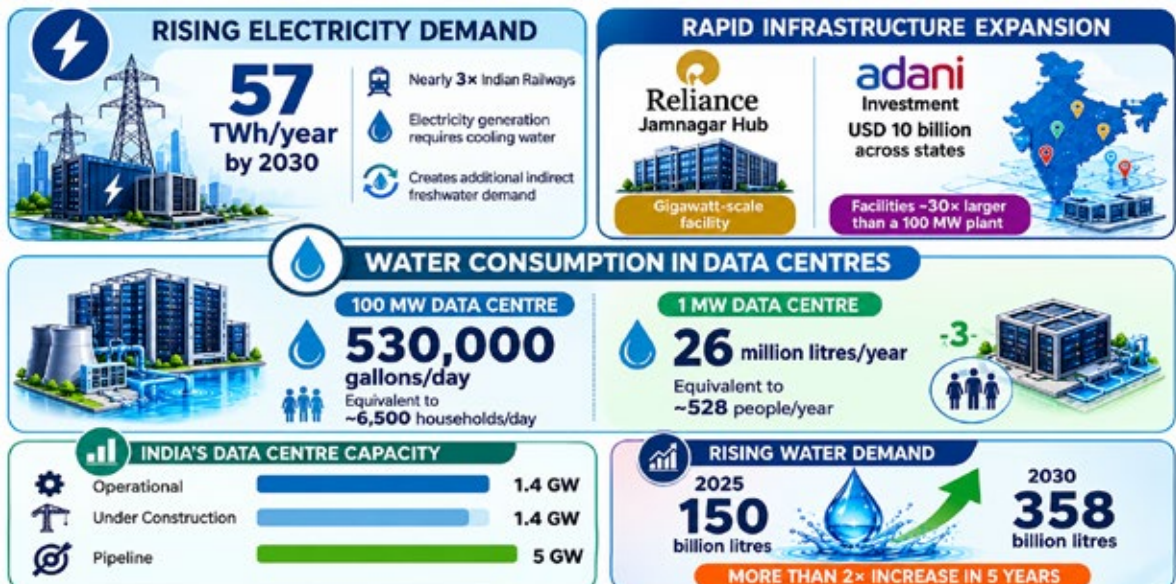
Cooling also drives water use. Water Usage Effectiveness (WUE) measures litres of water used per kilowatt-hour (kWh) of IT energy. Indian facilities typically use 1.5-2.5 litres, at or above the global average of 1.8-1.9, largely because of the hot climate; leading operators elsewhere achieve 0.3-0.7 through better siting and closed-loop cooling.

Market estimates cited in the TERI and Grundfos India white paper put data centres' water use in India at about 150 billion litres a year, rising to around 358 billion by 2030.

Electricity adds to this footprint: thermal power plants use large amounts of water for cooling, so the choice between thermal and renewable power is a water decision as well as an energy one.

According to the Ministry of Jal Shakti, operators are adopting direct-to-chip liquid, adiabatic and immersion cooling, along with higher-density racks, to reduce water and power use.

“One of the strengths of this collaboration was the ability to bring together complementary perspectives. TERI ensured that the analysis was rooted in credible research, data and sustainability principles, while Grundfos contributed insights from technology deployment and operational experience across markets. Throughout the process, we focused on balancing long-term sustainability goals with the practical realities faced by data-centre operators.”



What States Are Offering, And On What Terms

Eight states have dedicated data centre policies: Haryana (2022), Karnataka (2022), Maharashtra (2015, revised in 2023, with a Green Data Centre Park framework added in 2024), Odisha (2022), Tamil Nadu (2021), Telangana (2016), Uttar Pradesh (2021, amended in 2022 and replaced in 2026) and West Bengal (2021).

The policy is similar everywhere: exemption from electricity duty for 5 to 20 years, capital and interest subsidies, stamp duty relief and a guarantee of round-the-clock water supply. Where states differ is in the underlying cost of doing business, and in how far they tie incentives to environmental performance.

Maharashtra moved from its 2015 IT/ITES policy to a 2023 framework that classifies data centres as an essential service and added a Green Data Centre Park category in 2024 through a Government Resolution dated 9 October 2024. Uttar Pradesh amended its 2021 policy in 2022 and replaced it in 2026, adding a "Green & Sustainable Booster".

Resource use is substantial as a 100 MW data centre uses an estimated 730 million litres of water a year, and cooling alone can account for up to 40% of a facility's energy use. Incentives include electricity duty exemptions of 5 to 20 years, capital and interest subsidies, stamp duty relief and round-the-clock water supply guarantees, and a full ten-year duty exemption in Uttar Pradesh.

Maharashtra's Green Park category ties an exemption of up to 20 years to 100% green energy for core operations and mandatory disclosure of PUE and CUE, but none of these sustainability provisions yet includes a WUE target.

Maharashtra offers scale and strong connectivity through Mumbai and Navi Mumbai, but at a higher power cost: about ₹8.36 per kWh under its general high-tension tariff, 25–40% above Uttar Pradesh at a comparable voltage, although its 2023 policy also offers a 100% electricity duty exemption. Its 2023 framework classifies data centres as an essential service.

More significantly, the Maharashtra Pollution Control Board attaches a legally binding water condition to the Consent to Operate it issues, at least 60% of treated domestic wastewater must be recycled for cooling and firefighting.

Uttar Pradesh offers lower tariffs of about ₹6–7.5 per kWh, a full electricity duty exemption for 10 years, 5–100% relief on wheeling charges (the fee for moving power over the grid) for 25 years, and recognition of data centres as a distinct industrial category. On water, however, even its new 2026 policy offers a supply guarantee and requires a no-objection certificate but does not impose a binding recycling obligation.

The two states have therefore taken different routes. Maharashtra has attached a binding water reuse condition, while Uttar Pradesh has focused on lower power costs and fiscal incentives, with water addressed through supply guarantees and groundwater permissions. Other states can learn from both approaches as their own clusters grow.

A small but growing set of incentives now rewards sustainability performance rather than investment size alone. Maharashtra's Green Integrated Data Centre Park category, for projects of at least 500 MW and ₹30,000 crore, requires 100% green energy for core operations and at least LEED Silver certification, and makes disclosure of PUE and Carbon Usage Effectiveness (CUE) mandatory, in return for an electricity duty exemption of up to 20 years.

1

The enormous heat output in data centres require **24/7 cooling** to mitigate the risk of hardware malfunction and data loss.



2

Cooling systems account for approximately **38%** of an average data center's total energy use.



3

Some large data centres can use between **3–5 MILLION GALLONS OF WATER PER DAY.**



4

AI data Centres could require up to **1.7 TRILLION GALLONS OF FRESHWATER BY 2027.**



5

A large hyperspectral data centre that uses air-based cooling and evaporates drinking water to remove excess heat may need more than

50 MILLION GALLONS OF WATER EACH YEAR.

(about the same amount of water used to produce around 14,700 smartphones).



This water is lost through evaporation and cannot be returned to the original aquifer, reservoir, or water source.



Google has committed \$15 billion in partnership with the Adani Group and Bharti Airtel, Microsoft \$17.5 billion and Amazon \$35 billion, while the Adani Group has separately announced \$100 billion for renewable-powered hyperscale facilities by 2035. Maharashtra has signed MoU worth about ₹5 lakh crore. Uttar Pradesh's ₹2 lakh crore target has been folded into a wider plan by the state's Transformation Commission for a 5 GW "AI compute corridor" across five cities, targeting over 1.5 lakh direct jobs by 2040.

For states, the benefits include investment, tax revenue, construction activity and skilled technical employment. Permanent jobs at individual facilities are fewer. A 2024 study by the Joint Legislative Audit and Review Commission of Virginia, in the United States, found that a typical 250,000 square foot data centre employs around 50 full-time staff once it is running, about half of them contractors, compared with as many as 1,500 workers at the peak of construction.

The Government of India's projection, made in May 2026, of nearly one lakh engineering jobs as capacity grows to 6.5 GW by 2030 refers to the wider data centre ecosystem, not to jobs inside the buildings. States can therefore assess projects on their overall economic return (investment, tax revenue, construction activity and skilled jobs) relative to the land, power and water committed. Gujarat, for example, links part of its incentive package to investment in desalination.

Data Centre Value Chain And Regulatory Frameworks

A data centre passes through several stages: site selection, design and construction, IT equipment, power and cooling, day-to-day operations, and finally disposal of old equipment. India's rules are most developed for power and cooling.

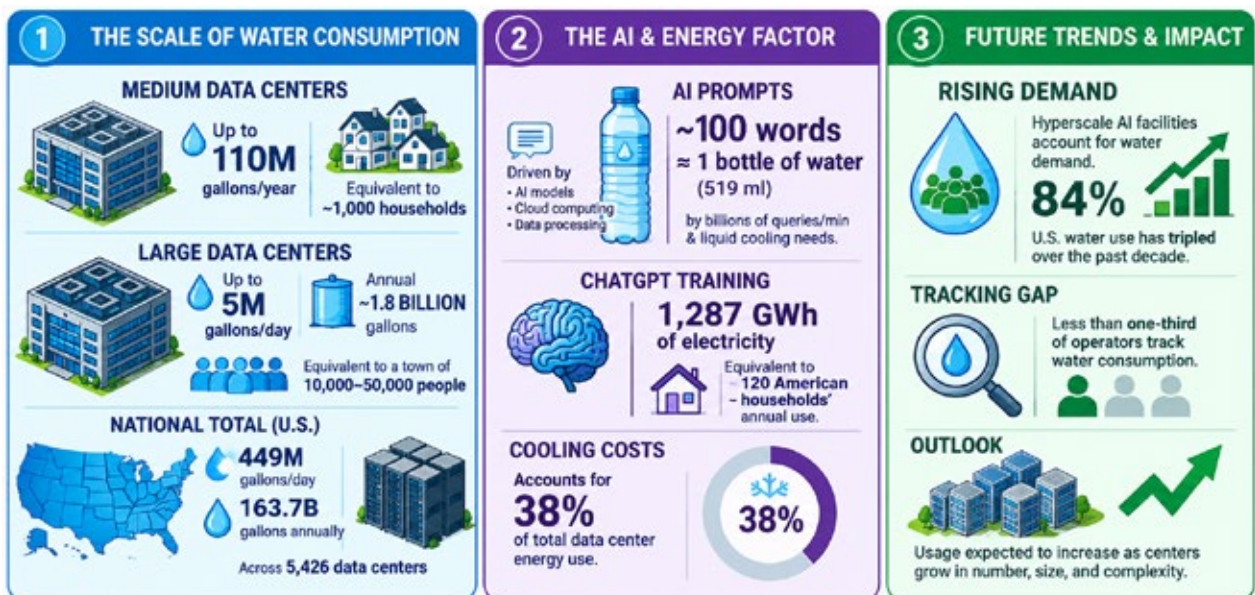
They are less developed for site selection and for end-of-life equipment, where the general e-waste and battery waste rules apply.

These stages form a value chain in which most of the resource use arises during operations. Operators run facilities around the clock, coordinating contractors, utilities and equipment vendors to maintain up-time, supported by continuous monitoring. Grid power enters through transformers and switchgear, while uninterruptible power supply (UPS) units and diesel generators, sized for full load, cover outages. Chillers, precision cooling units and fans keep equipment within safe temperatures.

Electricity is the largest operating cost, and cooling alone can account for up to 40% of a facility's energy use. Scaling AI data centres is expected to need an additional 45-50 million square feet of real estate by 2030, and power and cooling systems will have to adopt energy-efficient cooling and hybrid power sources. India's data centre cooling market, valued at USD 2.1 billion in 2024, is projected to reach USD 7.13 billion by 2030.

Water use falls into three categories. Direct use is dominated by cooling towers and evaporative or thermal insulation systems, where evaporated water is lost to the atmosphere, with smaller amounts used for humidification. Indirect use occurs off-site, because the thermal power plants that supply electricity need large volumes of water for steam and cooling.

Ancillary use, such as sanitation, cleaning and landscaping, is comparatively small. At the facility level, a 100 MW data centre uses an estimated 730 million litres of water a year. Because nearly all the electricity used by IT equipment ends up as heat, the cooling method chosen determines both energy and water use.



“

The biggest blind spot is treating sustainability of energy, water and emissions as separate issues. In data centres, they are deeply connected: reducing pressure on one can increase pressure on the other. A lower energy footprint does not automatically mean a lower water footprint, or vice versa. Sustainability is not about making one metric look better, but understanding the trade-offs and optimising the system as a whole.

”

DR RITU MATHUR

Director - Energy
Assessment & Modelling,
TERI



Operations also have local effects. Standby generators concentrate emissions near the site, chillers and generator testing cause noise, and heat rejection and electronic waste add further pressures. Many of these are set at the design stage and are expensive to retrofit.

At the national level, the framework is still developing. A Draft Data Centre Policy, under discussion since 2020, has not yet been adopted, although it has shaped thinking on single-window clearances and dedicated Data Centre Economic Zones. The inclusion of data centres in the Harmonised Master List of Infrastructure in 2022 had a more concrete effect, giving the sector access to infrastructure financing.

The Digital Personal Data Protection Act, whose provisions on where data is stored takes effect in May 2027, follows a conditional, risk-based approach rather than a blanket requirement to keep all data in India. Sector regulators such as the Reserve Bank of India, SEBI and IRDAI set their own data localisation rules, but these run largely separately from energy and water regulation.

The Union Budget 2026-27 has also proposed a tax holiday until 2047 for notified foreign cloud providers operating through Indian-owned data centres, a measure aimed at investment certainty rather than sustainability.

Under the Energy Conservation Act, the central government, in consultation with the Bureau of Energy Efficiency (BEE), can notify categories of energy users as “Designated Consumers”, which must report their energy use and meet efficiency norms. This route has been used for buildings, hotels and airports, but not yet for data centres, and using it would not appear to need new legislation.

Public procurement is already being used in a narrower way, through the PUE requirement in AI cloud tenders noted earlier. State electricity regulators set the tariffs that matter most to project costs, but only Uttar Pradesh currently treats data centres as a distinct category rather than placing them under general industrial tariffs.

The Central Ground Water Authority’s guidelines, issued in 2020 and amended in 2023, require industrial users to obtain a no-objection certificate to draw groundwater.

“

India’s digital economy is expanding at unprecedented speed, but its long-term success will depend on how effectively we manage the interconnected challenges of water and energy.

By leveraging high-efficiency hydronic systems, water reuse, closed-loop cooling and heat recovery solutions, India can scale its digital infrastructure while strengthening competitiveness, protecting local resources and building long-term energy and water resilience.

”

KIM JENSEN

Senior Director, Commercial Building
Services – Data Centers, Grundfos



“

Data centres require greater research and policy attention across the resource nexus of water, energy, land and materials. Priorities should include water-efficient cooling technologies, non-potable and treated-water reuse, site-specific water-carrying capacity, climate resilience and transparent resource accounting. Policy must establish clear efficiency targets and benchmarks, mandate resource-use disclosure, and ensure site sustainability, while encouraging innovation without shifting resource pressures from one domain to another.

”



ANSHUMAN

Director – Water Resources, TERI

Obligations increase with volume: users drawing more than 10 cubic metres a day must install monitoring equipment, and those drawing more than 100 cubic metres a day must carry out annual water audits and cut use by 20% over three years. Whether a certificate is granted, and for how long, depends on whether the local area is classified as safe, semi-critical, critical or over-exploited.

NITI Aayog and the CII Water Institute have published voluntary water neutrality guidelines that identify data centres as an emerging source of demand. Maharashtra's Pollution Control Board condition, under the state's Urban Wastewater Treatment and Reuse Policy, remains the only legally binding water condition specific to data centre approvals in India.

Taken together, three areas are still developing. The first is disclosure. Among the major operators reviewed in the TERI and Grundfos India white paper, a small minority report PUE, one reports WUE in full, and none yet reports renewable energy or energy reuse metrics, although the same companies report carbon emissions relatively well.

The second is consistency: most national instruments are voluntary, and it should be noted that a reliable data baseline would make any future guidelines easier to adopt and follow. The third is siting: there is not yet a common method for checking, before approval, whether local water and power supplies can meet a new facility's demand alongside existing users.

Compared with other countries, India is early rather than behind. The European Union already requires large data centres to report their energy performance publicly and to pursue the reuse of waste heat. Singapore's Green Data Centre Roadmap sets an efficiency target for all facilities and a stricter one for new capacity, and rewards liquid and immersion cooling.

Ireland's regulator now requires new data centres seeking a grid connection to bring matching generation or storage, and to meet most of their annual demand from newly added renewable sources. The Netherlands restricts large hyperscale facilities nationally.

“

This white paper reflects a strong partnership between TERI's research expertise and Grundfos' practical experience in water and energy solutions. TERI brought a rigorous, evidence-based understanding of sustainability, policy and resource challenges, while Grundfos contributed insights from working with industries and critical infrastructure projects around the world. Together, we were able to combine data, research and real-world implementation experience to explore how water and energy are interconnected in data centres.

”

DR VIBHA DHAWAN

Director General, TERI



Recommendations

An audit-based study of what Indian data centres actually consume would give a sound basis for any future standards.

Standards set on uncertain numbers risk either discouraging investment without real savings or being too loose to make a difference. Maharashtra's grid operator, which oversees the country's largest cluster of data centres, has noted that its current data cannot yet support firm conclusions about how these loads behave on the grid.

Reporting could begin with PUE, WUE and CUE, and later extend to renewable energy and energy reuse. It can build on existing instruments rather than a new one: the 2026 building standards, the building code's existing recognition of data centre spaces, and BEE's power to notify Designated Consumers, which needs no new legislation.

Reporting thresholds could scale with facility size, with the EU's 500 kW threshold as one reference point. Singapore's approach, a general target combined with a stricter one for new capacity, offers a model for raising ambition over time without discouraging investment.

Siting decisions shape everything that follows. Site assessments could cover grid capacity and access to renewable power, local groundwater availability, cooling technology suited to the climate, availability of treated water, climate risk, competing land uses and telecom redundancy, looking at clusters of facilities rather than one facility at a time.

For large facilities in water-stressed districts, one option is an independent assessment before commissioning, showing that new demand can be met alongside existing users, like the approach the Central Ground Water Authority already takes in over-exploited areas. State resource maps, a shared register of projects, and grid upgrades timed to project milestones would support this without new legislation.

Preparing the grid is the most time-sensitive step. The Grid Controller of India, which operates the national grid, warned at the India AI Impact Summit in February 2026 that a sudden, unplanned loss of 1-1.5 GW of data centre demand could cause a grid disturbance, a risk made harder to manage by limited visibility into how these loads behave.

Useful near-term steps include better monitoring at major connection points and a standard framework for sharing data between transmission utilities and operators. After that, planners can assess whether large data centres can take part in demand response.

Developers that bring their own generation and storage, a practice formally regulated in Ireland and emerging in India through captive and open-access arrangements, would also benefit from clearer rules, given the scale of investment already committed.

These steps work best when designed jointly, by the government and the industry, bringing together those who build, power, cool and regulate data centres, offer a model that could become a regular, structured dialogue involving the Bureau of Energy Efficiency, the Bureau of Indian Standards, the Ministry of Environment, Forest and Climate Change (which handles refrigerant policy), MeitY (which is steering the national data centre policy), state agencies and industry bodies.

Conclusion

India does not have to choose between digital growth and managing its water and energy resources. With better data, phased reporting and siting that takes local power and water into account, the sector can continue to grow at the pace its economic potential allows. Other countries introduced rules after data centres had become a large share of their electricity demand. India has the opportunity to plan earlier, and to do so in partnership with the industry that is designing, building and operating the infrastructure.



The rapid growth of AI is transforming how data centres are designed and operated. As computing power increases and rack densities rise, cooling becomes a critical factor in ensuring performance, reliability and resource efficiency. Advanced cooling technologies, supported by intelligent pumps, sensors, precision controls and high-performance Coolant Distribution Units (CDUs), help operators manage higher thermal loads while reducing energy consumption and optimising water use.



BURAK GÜRKAN

Global Senior Director, IT Cooling Industry, Grundfos



COP31: THE MOMENT OF RECKONING

NOVEMBER 2026

As the world gathers for COP31, one question looms large: Who bears the cost of climate action, and who gets to shape its future? At the heart of the negotiations lies the widening divide between the Global North and Global South over climate finance, emissions, adaptation and support for vulnerable nations.

Our November cover story explores the key issues facing the summit, from national climate targets and a fair energy transition to loss and damage and the needs of developing countries. Will COP31 bridge the climate divide and turn promises into action, bringing nations closer to a common goal?

Stay Tuned!
www.enersider.com



Q

Usha Subramaniam, Country President, India, Grundfos, leads the company's efforts to advance intelligent, energy-efficient and sustainable water solutions. As India's data-centre infrastructure expands, she highlights the need to balance digital growth with responsible resource management.

In this exclusive conversation with Enersider, she discusses how intelligent cooling, water efficiency and integrated technologies can support more resilient, resource-efficient and future-ready data centres, alongside greater collaboration across industry and policymakers.

Grundfos works across markets with very different water and infrastructure conditions. What makes the Indian data centre context distinct from other markets you have worked in?

India presents a unique and exciting opportunity, combining rapid digital expansion with a growing focus on sustainable resource management. As one of the world's fastest-growing data centre markets, India is playing an increasingly important role in the global digital economy. At the same time, many emerging data-centre clusters are located in regions which are already water-stressed, with high energy load.

This creates the need to embed efficiency and resilience from the outset. At Grundfos, we see strong potential for India to become a global leader in sustainable digital infrastructure by adopting intelligent cooling, water stewardship and energy-efficient technologies that support both business growth and long-term resource security.

India has a unique opportunity to demonstrate that digital growth and resource stewardship can advance together. At Grundfos, we are committed to working with industry and policymakers to help build data centres that are efficient, resilient and ready for the future.

USHA SUBRAMANIAM

Country President, India, Grundfos



Water and energy efficiency can sometimes involve difficult trade-offs. Based on Grundfos' experience, how should data centre operators approach these trade-offs when selecting cooling and water-management solutions?

We believe the most effective approach is to focus on overall system performance rather than optimising individual metrics in isolation. Every data centre operates within a unique context shaped by climate, water availability, workload requirements and growth ambitions. Today, advanced solutions such as intelligent pumping, closed-loop cooling, water reuse and liquid cooling technologies are enabling operators to improve both water and energy performance simultaneously.

The opportunity is not to choose between water efficiency and energy efficiency, but to design integrated systems that deliver both. By taking a lifecycle perspective, operators can build facilities that are efficient, resilient and well-positioned to support scalable future growth.

From Grundfos' experience working with industry, where do you see the biggest gap today between available water-efficiency technologies and their adoption in large infrastructure projects?

The encouraging news is that many of the technologies needed to improve water efficiency are already available and proven. The next step is accelerating their adoption at scale. Solutions such as intelligent pumping systems, water reuse, advanced monitoring and closed-loop cooling can deliver significant benefits, but investment decisions are often driven by upfront costs rather than long-term value creation, or in other words lifecycle costs.

We see a growing opportunity for the industry to adopt a lifecycle approach that recognises the benefits of efficiency, resilience and reduced operating costs. Greater transparency around performance metrics such as WUE and PUE can also help organisations make more informed decisions and build confidence in new technologies.

The white paper by TERI-Grundfos brings a technology perspective into a wider conversation about sustainability and resource resilience. What role does Grundfos see for industry collaboration in accelerating the adoption of these solutions?

Collaboration will be critical to ensuring that India's digital infrastructure growth is both sustainable and resilient. No single stakeholder can drive this transition alone. Data-centre operators, technology providers, policymakers, utilities, academia and industry bodies all have an important role to play.

Through collaboration, the sector can share best practices, develop common frameworks, accelerate innovation and scale proven solutions more quickly. At Grundfos, we see ourselves as a partner in this journey, working alongside industry and policymakers to help build data centres that are not only high-performing but also resource-efficient and future-ready. Together, we have an opportunity to make India a global benchmark for sustainable digital growth.

Many of the sustainability challenges around data centres extend beyond individual facilities to issues of infrastructure, policy and resource availability. What role should policymakers and industry play in addressing these wider challenges?

The scale and importance of India's digital growth mean that collaboration will be essential. Policymakers can help create enabling frameworks that encourage efficient resource use, innovation and long-term planning, while industry can accelerate the adoption of proven technologies and best practices.

Together, they can strengthen areas such as water reuse, resource-efficient cooling, performance standards and infrastructure planning. At Grundfos, we believe the most effective solutions emerge when government, industry, academia and technology providers work together toward shared goals. India has a unique opportunity to demonstrate that digital growth and resource stewardship can advance together, and we are committed to supporting that journey as a trusted partner in building efficient, resilient and future-ready data centres.



Digital Public Infrastructure: Foundation For A Connected Future

By M. Jamshed

Despite major strides by both the public and private sectors, digital public infrastructure (DPI) is still an evolving concept. According to the UNEP report on DPI for environmental sustainability, it is a set of shared digital systems that are secure and interoperable, built on open standards and specifications, to deliver equitable access to public and/or private services at societal scale. These systems are governed by enabling rules that drive development, inclusion, innovation, trust and competition, while respecting human rights and fundamental freedoms.

DPI has become central to economic viability and a sustainable future. It is not merely an interoperable digital system; it can power a range of public utilities for economic inclusion and for service delivery by both the public and private sectors. It is normally understood to consist of interoperable payment systems, identification systems, and an architecture for data empowerment and protection.



DPI and its myriad interpretations;

A simpler way to understand DPI is as the digital equivalent of physical infrastructure such as highways, railways and utility grids, which enable economic and social activity at scale. Its building blocks, namely digital identity, payments and data exchange, work like pipes and power lines, except that they carry trust rather than transportation, water or electricity.

In today's world, DPI is an essential digital system and platform that helps businesses, communities and individuals participate in the national digital economy and society, with reliable, safe and equitable access to goods and services. Physically, it rests on communications networks, data centres and data exchange platforms with the required safeguards and protocols.

Among the most significant DPI stories is Aadhaar, the biometric digital ID system that enables 1.4 billion users in India to access government benefit programmes, banking and many other facilities. Similarly, the Open Health Stack, an open-source set of building blocks initiated by Google in 2023, supports offline digital health applications and has been approved by the World Health Organization.

DPI and its coordinates with Frontier Technologies;

A World Economic Forum (WEF) report of April 2025 on DPI observed that the technology landscape is transforming in real time, spurred by artificial intelligence, extended reality (XR) and quantum computing. This is moving us towards a future in which supercharged AI makes the one-person enterprise readily achievable and quantum computing promises paradigm shifts in drug discovery and optimisation.

MOHD JAMSHED

Distinguished Fellow, CRF

Public Policy and Governance Expert

Today, DPI is not only about public sector initiatives; it increasingly extends to the private sector, which is both a driver and a beneficiary, notably in innovating models that can be widely adopted.

According to the McKinsey Global Institute's report on digital identification, scaling digital ID alone can drive GDP growth by 1 to 13 per cent, an estimated five trillion dollars in economic gains worldwide. The question, however, remains whether DPI is ready for frontier technologies.

The global disparity and the Development Gaps;

A recent World Bank brief says that scaling up DPI must be a priority for all governments, but major gaps remain. Some 2.9 billion people, mostly in sub-Saharan Africa, lack digital IDs for online transactions, and only 8 per cent of lower-middle-income countries and 16 per cent of upper-middle-income countries have fast, inclusive payment systems. Progress remains limited by fragmented strategies, low institutional capacity, outdated laws and a lack of secure, interoperable systems at scale.

A recent UNDP report on DPI states that it "acts as a critical accelerator for achieving the Sustainable Development Goals (SDGs) by 2030". DPI's foundational systems of digital identification, fast payments and secure data exchange expand financial and social inclusion and directly affect almost all of the 17 SDGs, notably SDG 1 (no poverty), SDG 3 (good health and well-being), SDG 10 (reduced inequalities) and SDG 17 (partnerships for the goals).

India's DPI Journey- the global success story; India's progress in building a robust DPI is today an example to the world, particularly to developing societies. A 2025 WEF report has a chapter on 'Security-by-design, lessons from India's DPI journey'. It highlights that India treats digital identity, payments and data exchange as secure foundational infrastructure rather than a profit centre, which has yielded extraordinary societal and economic returns and created a blueprint for other countries developing their own DPI.

India's digital infrastructure laid the foundation for connected identity, banking and telecommunication. The JAM Trinity of Jan Dhan, Aadhaar and Mobile connectivity reflects its orientation towards inclusion. With 144 crore Aadhaar numbers and over 2,700 crore authentication transactions in 2024-25, it is the largest unique identification and secure authentication system ever. Jan Dhan accounts have grown to over 57 crore as of March 2026, and wireless telephone subscribers reached 125 crore at the end of December 2025. India's DPI has grown into a connected national framework built on application programming interfaces, called India Stack.

The digital economic infrastructure also includes the Unified Payments Interface (UPI), which processed 21.7 billion transactions worth over ₹28.3 lakh crore in January 2026 alone.

The Open Network for Digital Commerce (ONDC), launched in 2022, had 1.16 lakh retail sellers live as of December 2025. The Public Financial Management System (PFMS), Government e-Marketplace, Digi Locker, UMANG, eCourts, CoWIN, eHospital, Poshan Tracker, eOffice, API Setu and PM Gati Shakti are among the other initiatives that have transformed the country's digital landscape.

India has signed memoranda of understanding with 24 countries for cooperation on India Stack and DPI. UPI is today live in eight countries: the United Arab Emirates, Singapore, Bhutan, Nepal, Sri Lanka, France, Mauritius and Qatar, strengthening India's position in the global fintech landscape.

During its G20 presidency in 2023, India brought DPI to the centre of the development agenda. The G20 New Delhi Declaration recognised DPI as a development accelerator, and India articulated the idea that DPI is not proprietary technology but digital rails for inclusive growth, particularly for the Global South. The Global Digital Public Infrastructure Repository was launched as a knowledge platform to share lessons and practices.

Security, Trust and the dynamism of technology;

DPI also faces cyber risks, which require strengthening digital resilience. India's globally recognised model involves government-owned infrastructure operating alongside private sector innovation, enabling rapid innovation while maintaining government oversight of critical infrastructure and ensuring that DPI remains a public good rather than becoming purely commercial. The WEF report also highlights that patient capital invested in secure digital infrastructure, where security is embedded from conception rather than retrofitted, can generate extraordinary returns far beyond financial metrics.

Bill Gates, writing in Gates Notes, described the future of public infrastructure as digital, efficient and for everyone, and DPI as being as important for progress in the 21st century as its brick-and-mortar predecessors. Citing India, he wrote: "Take India. The country's digital ID system, Aadhaar, gives every resident the ability to prove who they are, while its Unified Payments Interface facilitates instant payment via mobile phone. Together, these programmes have expanded access to financial services dramatically.

This is economic empowerment on a massive scale, unlocked by the country's rapid expansion of mobile networks over the past decade."

Finally, like any technology, be it artificial intelligence or the super intelligence, DPI requires cautious supervision and constant vigil so that its advantages are not undermined by the technology itself. Its challenges and risks must be safeguarded against to secure those advantages for generations to come.

The views expressed are personal.

India's AI Race Will Be Won On Power And Water

By Vinay Bhati

India's AI ambitions have brought plenty of discussion around chips, advanced models, computing capacity and investment. What gets far less attention is how much electricity and water the country will need to support all of this. AI relies heavily on cloud infrastructure. The models being developed today need enormous computing power, much of it supplied by data centres that handle everything from training complex models to running everyday AI applications.

Cloud is not quite as virtual as the name suggests. Behind it are thousands of servers, electrical equipment, substations and cooling systems, all working continuously. These facilities need reliable electricity and considerable amounts of water to be cooled. As AI computing requirements grow, these facilities are beginning to look like a new category of industry.

India is building them at considerable speed. Government data shows installed data-centre capacity rising from about 375 MW in 2020 to roughly 1.5 GW in 2025. Estimates cited by the Council on Energy,

Environment and Water suggest capacity could reach 4.5–6.5 GW by 2030. Around \$95 billion of investment was committed to the sector between 2019 and 2025. There is every reason for India to want this investment. A large digital economy should have more of its computing infrastructure at home. Cloud adoption, digital payments, e-commerce, data localisation and AI will all increase demand.

But there is a consequence that is easy to overlook. The next phase of India's digital expansion will depend as much on transformers and transmission lines as it does on GPUs. A 100 MW data centre running continuously at full load would require up to 876 GWh of electricity in a year and a hypothetical 1 GW cluster would consume approx. 8.76 TWh.

Put another way, building computing capacity is one thing; delivering several hundred megawatts reliably to one location, every hour of the year, is another.

India is expanding generation rapidly. Yet aggregate capacity tells us relatively little about whether the necessary electricity can be delivered at a particular site. Large new loads may require stronger substations, new transmission capacity and additional generation.

These investments do not necessarily move at the same speed as the technology sector. This is perhaps the most important infrastructure question surrounding the AI boom. Data centres can be commissioned within a few years, unlike major power infrastructure which often takes longer.



VINAY BHATI
Project Director,
IGHA-Hyvolution India

Where India puts its next generation of data centres therefore matters. A megawatt located near available transmission capacity is not the same as a megawatt added to an already congested urban system. The source of that electricity matters too. Many large technology companies procure renewable energy, which is welcome.

But a data centre does not switch itself off after sunset. Buying enough renewable electricity over a year to match annual consumption is different from supplying clean electricity every hour in which the facility operates.

For India, that makes the data-centre story closely connected to another emerging market: round-the-clock renewable power. Solar and wind will be part of the answer, but so will batteries, transmission, grid balancing and other sources of firm electricity. Large data centres could become valuable customers for precisely the type of clean-power systems India needs to build anyway. That opportunity deserves more attention than another debate over whether AI is “green”.

Water presents a different problem. CEEW estimates annual water use by India's data centres at around 150 billion litres, while the sector accounted for roughly 0.5 per cent of India's electricity consumption in 2024. Both electricity use and water demand are expected to more than double by 2030.

The headline number should be treated carefully. Data centres do not all use water in the same way. Cooling architecture, climate and operating design matter enormously.

There is also an important distinction between water withdrawn and water actually consumed, while some of the sector's water footprint arises indirectly through electricity generation. Technology is changing as well. Closed-loop systems, direct-to-chip cooling and other approaches can substantially reduce freshwater requirements.

The more important issue for India is geography. According to an industry report, more than half of the country's data centres are already located in water-stressed regions and three-quarters of the facilities are concentrated in Maharashtra, Tamil Nadu, Karnataka, Telangana and Uttar Pradesh.

That should change the way the water discussion is framed. A data centre drawing water in an area with comfortable availability presents a very different planning problem from a cluster of facilities entering a watershed where households, agriculture and existing industries are already competing for supply.

None of this is an argument for slowing India's data-centre expansion. Quite the opposite. If computing infrastructure is becoming strategically important, its physical foundations deserve more serious planning.

States have been competing for data-centre investment through land, fiscal incentives and infrastructure support. The next stage of that competition should be about quality as much as quantity. Large facilities could disclose their power usage effectiveness, water usage effectiveness, freshwater dependence, cooling technology and expected electricity sourcing.

Projects that use treated wastewater, highly efficient cooling or genuinely additional clean-power capacity could receive preferential treatment. Grid strength, water stress and the cost of supplying new infrastructure ought to matter alongside land prices and connectivity.

There is a broader reason for India to get this right. Data centres will not be the only new claim on the power system. Electric mobility, industrial electrification, semiconductor manufacturing and green hydrogen will all add demand—much of it seeking the same low-carbon electricity. AI therefore arrives in India at a moment when the country is trying to expand several strategic industries simultaneously.

That changes the question. It is no longer simply: Can India attract data centres? It is: Can India build the energy and water systems required to host them competitively at scale?

Countries spent the first phase of the digital revolution competing over software, talent and telecom networks. The AI phase will add a more old-fashioned set of competitive advantages: land, substations, transmission capacity, cooling technology and reliable electricity. India has considerable advantages in this contest. It also has the opportunity to avoid some of the mistakes that come from treating digital infrastructure as though it were weightless.

The countries that lead the AI age will certainly need chips, capital and engineers. Increasingly, they will also need to know where the next gigawatt of electricity will come from, and where the millions of litres of water needed to support this expansion will be sourced.

The views expressed are personal.

BEYOND BORDERS

ASEAN

ASEAN

In this segment, we traverse the ASEAN energy corridor — a space where innovation meets intent. From renewable breakthroughs to policy pivots and power partnerships, this segment uncovers how Southeast Asia is redefining its energy narrative, one megawatt and one milestone at a time.


01

Vestas Powers Up Vietnam's Clean Energy Ambitions with Two New Projects Under PDP8 Totaling 16 Wind Turbines

HANOI: Vestas has been awarded contracts to supply 16 V163 wind turbines across two new wind farms in central Vietnam. Part of the Power Development Plan 8, the projects are among the first to secure investment licenses. The 163-metre rotors will be Vestas' largest deployed in Vietnam, backed by 20-year service agreements. Component delivery begins in 2027, supporting Vietnam's net-zero 2050 goal. **(ANI)**


02

South Korea unveils \$747 billion energy transition plan through 2035

Seoul: South Korea unveiled a 1,000 trillion won (\$747 billion) energy transition plan through 2035, targeting 100 GW of renewable capacity by 2030 and over 70% electric and hydrogen vehicle sales by 2035. The K-GX strategy covers green steel, batteries, solar, wind, hydrogen and small modular reactors, while accelerating decarbonisation in steel, petrochemicals, refining, cement and semiconductors. **(REUTERS)**


03

Philippines advances nuclear power tender framework

Manila: The Philippines' Department of Energy is advancing rules for competitive procurement of its first nuclear capacity, targeting 1,200 MW by 2032, 2,400 MW by 2035 and 4,800 MW by 2050. Revisions cover grid readiness, delivery schedules and pricing. Winning a tender would not authorise construction, which needs Philippine Atomic Energy Regulatory Authority approval. The draft remains under consultation. **(ASIAN POWER)**

BEYOND BORDERS

MENA

45

BEYOND BORDERS

MENA

Enersider Desk brings you the latest developments shaping the energy landscape across the Middle East and North Africa — from ambitious renewable transitions to strategic oil and gas investments. This segment captures the region's evolving energy narrative, spotlighting innovation, policy shifts, and partnerships driving sustainable growth in one of the world's most dynamic energy frontiers.



01

UAE energy project pipeline hits \$210bn across 136 developments

Abu Dhabi: The UAE has 136 energy projects under development worth an estimated \$210 billion, according to industry data. Oil and gas dominate, with upstream nearly 40%. Renewables account for 11% and hydrogen 9%. Around 17,980 MW of renewable capacity across 14 projects is tracked for delivery by 2030. Only 28 of 99 GCC renewable projects have reached final investment decision.



02

Morocco Energy Leaders, Clean Energy Business Council Partner to Boost Clean Energy Investment

Agadir: Morocco Energy Leaders and the Clean Energy Business Council signed a strategic partnership to boost clean energy investment across Morocco, Africa and the Middle East. The collaboration will focus on renewables, green hydrogen, Power-to-X, sustainable infrastructure, climate finance and industrial decarbonisation. It aims to connect Gulf capital and expertise with Moroccan projects as Morocco targets 52% renewable electricity in its mix by 2030. **(MOROCCO WORLD NEWS)**



03

ADNOC signs LNG deal to supply 2 million tonnes to Thailand from 2027 UAE

Abu Dhabi: ADNOC will supply about 2 million tonnes of LNG to Thailand's Gulf Group over a multi-year term from 2027, expanding its Asian presence. The deal supports ADNOC's integrated LNG trading platform, targeting 47 million tonnes per annum by 2035. Ruwais LNG, with 9.6 mtpa capacity, is set to begin operations in 2028. The agreement extends an earlier 2025 supply deal. **(GULF NEWS)**

Before We Build: Why India Must Set Its AI Priorities First

By Mandar Suhasrao Joshi

Public debate on artificial intelligence tends to dwell on models, applications and jobs. The buildings that make these possible draw power from the grid, take water from local sources and release heat into their surroundings. India's policy conversation has reached the point where this physical dimension can no longer be treated as a technical footnote. The more useful question is not how many data centres the country should build, but what they are for.

The distinction matters because infrastructure demand follows from purpose. A facility designed to train very large models differs from one built to run inference for a district health programme or an agricultural advisory service. When national priorities are left undefined, the default is generic capacity, sized to investor expectations and located wherever land and incentives are most generous. Sustainability is then pursued as a remedy for consequences, when it ought to be a principle of design.

As per NITI Aayog's Scenarios Towards Viksit Bharat and Net Zero report, by 2047, IT load is projected to reach 65 GW, resulting in total electricity demand of approximately 45 GW (394 TWh). Separately, according to a written reply by the Ministry of Power to Parliament in July 2026, an additional load of 26.3 GW from Artificial Intelligence (AI) data centres is projected by 2031–32. This demand is expected to be integrated into the grid and primarily met through renewable energy capacity.

Water management is also evolving in the power sector. Although thermal power generation requires substantial quantities of water, the use of treated wastewater and recycled water is helping reduce dependence on freshwater. These developments highlight the importance of a broader resource-efficiency approach, in which cooling choices, water sourcing, reuse, and electricity demand are considered together.

The wide range of capacity projections makes it difficult for planners to accurately size generation, transmission and water infrastructure. Over-provisioning can result in stranded assets and place an additional burden on ratepayers, while under-provisioning may encourage greater reliance on fossil fuel-based backup and improvised water sourcing.

A clear articulation of the uses and applications that the country intends to prioritise could therefore provide a more defined basis for planning and help narrow the range of projections given by many entities.

Electricity and water cannot be planned separately, and this is the core of the energy-water nexus. Evaporative cooling lowers electricity use but consumes water, while air cooling conserves water at the cost of more power, particularly in the Indian summer.



MANDAR SUHASRAO JOSHI

Research Analyst, Climate Change & Energy
Transition, Chintan Research Foundation

Where facilities sit makes this more consequential. A report by WRI India finds that more than half of the country's data centres are in water-stressed regions, and S&P Global estimates that 60 to 80 per cent could face high water stress within this decade.

Setting clear priorities can strengthen the sustainability of AI infrastructure while ensuring that its growth remains aligned with India's broader developmental objectives. This can be achieved through at least five mutually reinforcing channels. The first is strategic siting. As AI applications become more diverse, infrastructure can increasingly be located according to workload requirements and regional resource availability.

Inference capacity supporting public services, Indian-language tools and regional health systems can, in many cases, be distributed across Tier-2 and Tier-3 cities. Locating facilities in areas with better access to water, renewable energy and available grid capacity can help distribute the benefits of digital infrastructure while easing pressure on established metropolitan clusters.

The second is technology. Much of the near-term value of AI for Indian enterprises and public institutions is likely to come from inference and specialised applications, alongside continued innovation in model development. Designing infrastructure around these diverse workloads can optimise computing requirements and reduce unnecessary baseline demand.

Efficiency assessments should therefore extend beyond facility-level indicators such as Power Usage Effectiveness (PUE) to include chips, servers, data movement and software, which determine the energy required to deliver a given computing task.

At the infrastructure level, district cooling systems (DCS) can complement these efficiency gains by providing reliable, centralised chilled water for high-density IT loads while reducing the capital and operating burden of on-site cooling plants. In water-stressed locations, using treated sewage effluent or other non-potable water sources can further reduce freshwater dependence.

The third is opportunity cost. Water and electricity are essential inputs for computing, but they also support households, industry, agriculture and other economic activities.

Assessing the economic and social value generated per unit of electricity and water can help guide investment towards more resource-efficient solutions. This can encourage innovation in cooling, water reuse, renewable energy procurement and storage while making competing resource requirements more visible in infrastructure planning.

The fourth is adaptability. The rapid evolution of AI models, computing architectures and hardware makes it difficult to establish a fixed, long-term infrastructure pathway.

Combining clear objectives with shorter implementation milestones, continuous monitoring and periodic recalibration can help policies and investments respond to technological advances, changing workloads and emerging resource constraints. A stable statement of purpose can thus provide the foundation for a flexible approach to sustainable AI infrastructure.

It is also important that operators disclose load and water use. Benchmarks should cover water usage effectiveness and lifecycle carbon intensity. Siting tools that overlay basin-level water stress and renewable capacity should be open and available to state authorities.

The fifth is prioritising AI applications. Clearer priorities for AI deployment can help align computing investments with India's developmental needs. Potential areas of application include public service delivery, Indian-language tools, regional healthcare systems, agriculture and other services that address local needs.

Identifying these use cases can help direct AI capacity towards applications that deliver tangible economic and social benefits while supporting a more geographically balanced expansion of digital infrastructure.

None of this argues for restraint in digital ambition. It argues for sequence. India should first decide where AI will be deployed, which developmental problems it is meant to address, and which capabilities must be built at home. Infrastructure and resource requirements can then follow from those choices.

Done in the right order, India could also offer framework useful to other Global South economies, which face the same pressures on power and water. That model would measure success by the value delivered for each unit of scarce resource consumed.

The views expressed are personal.





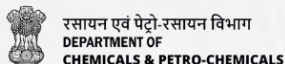
Hyvolution INDIA

17- 18 NOVEMBER 2026 | INDIA EXPO MART, GREATER NOIDA (DELHI NCR)



Exhibition | Planery Conference | Technical Conference | Leadership Roundtables

SUPPORTED BY



GOLD PARTNER



ASSOCIATE PARTNERS



CO-ORGANISED BY



EVENT HOST



INDUSTRY PARTNER



SUPPORTING PARTNERS



STARTUP PAVILION PARTNER



EXHIBITORS



ASSOCIATION PARTNERS



INDUSTRY NETWORK PARTNER



MEDIA PARTNER



OFFICIAL MAGAZINE PARTNER



SCAN TO
VISIT THE
WEBSITE

WEBSITE

WWW.IGHA-HYVOLUTION.COM

EXHIBITION AND PARTNERSHIPS:

SALES@IGHA-HYVOLUTION.COM

The Pedestrian Dilemma - Rights On Paper, Obstacles On The Ground

By Megha Chauhan

As we aspire to become Atmanirbhar Viksit Bharat by 2047, the most basic form of human mobility, walking remains a daily struggle for the urban citizens, highlighting a stark gap in urban development initiatives. Pedestrians constitute a significant share (~36%) in the urban transport in India (ORF, 2024), despite that millions of pedestrians lack access to barrier free, and safe footpaths to access daily travel needs to work, school and other destinations.

With rapid urbanisation and emerging road infrastructure, use of motor vehicles has increased significantly, shrinking the pedestrian spaces. Lack of accessible pathways has forced the pedestrians to walk alongside the vehicles moving at speed, putting them at risk of accidents. In 2024, MoRTH recorded 36,526 pedestrian fatalities in India, constituting 20% of the total road accident fatalities, making pedestrians second most vulnerable group after two-wheelers (MoRTH, 2024).



The plight of pedestrians is the same even in the national capital, Delhi. As per the India Status report on Road safety, 2024 by IITD, 44% of the roads in Delhi have no footpath, of the remaining 56% of the road that have footpaths only 26% meet the height and width guidelines suggested by the Indian Road Congress. Despite lack of infrastructure, walking accounts for 30% of the trips in Delhi, leading to a concerning surge in pedestrian accidents and fatalities (IITD, 2024).

Right to Walk- A Fundamental Right

Supreme court of India, in its landmark judgement in June 2026, in case of Maniyars Iliyaz Shaik Riyaz vs P. Ayyappan, ascertained that right to walk on safe, demarcated footpaths is a fundamental right under Part III of the Constitution of India, Article 19(1) (d) and 21. Asserting the legal precedence of pedestrian mobility over vehicular traffic. The court highlighted the governance gap in framework under the Motor Vehicles Act, 1988 for neglecting the pedestrian's interest and enforcing entirely vehicle centric guidelines. The court also highlighted the need for a comprehensive framework ensuring accountability for providing safe walking infrastructure for pedestrians.

The Public Space Management Issue

Pedestrians' walkability across Indian cities is often hindered due to common consistent challenges including encroachment of pedestrian paths, unorganised parking of motor vehicles, presence of unauthorised hawkers, discontinuity in design, damaged infrastructure, absent or poor lighting etc. (PIB, 2026). Besides lack of infrastructure, the key concern is the lack of public space management. Inappropriate public behaviors like littering, poor sanitation, public urination along the footpaths significantly disrupt the pedestrian convenience,

MEGHA CHAUHAN

Associate Fellow in the Transport and Urban Governance Division, TERI

creating unsanitary walkways, foul odors, and inaccessible walkable spaces, emphasising need for stringent monitoring and enforcement guidelines.

Guidelines Lacking Enforcement Mandates

Several statutory instruments like National Urban Transport Policy 2006, National Building Code of India (NBC 2016) – Part 3, Indian Road Congress guidelines IRC:103-2022, Central Motor Vehicles Rules (CMVR), Rights for persons with Disabilities Act, 2016 and Street Vendors Act 2014 already identifies the need for accessible public spaces for pedestrians (Earth, 2026). Emphasising that the beyond supporting motor vehicles, roads are also meant to provide space for pedestrian accessibility, street vending, parking, access to public transport and utilities etc. However, most of these statutory instruments lack enforcement mandates, institutional unaccountability, and dedicated financing mechanisms leading to instances of poorly designed footpaths, inaccessible infrastructure, lack of maintenance, and unauthorised use of the pathways.

Learning from International Experiences

Several countries have prioritised pedestrians over motor vehicles for inclusive public spaces. For instance, in 1962, a 1.15 km long main street in Copenhagen was converted into pedestrian space, despite initial resistance from shop owners about potential impact on revenue. However, increased footfall due to the introduction of outdoor cafes and increased public engagement activities supported businesses, increasing the revenues substantially. This initiative unlocked the potential of high-quality outdoor public spaces.

Gradually, more streets in Copenhagen were pedestrianised. As a result, the pedestrian space in Copenhagen increased by 600% from ~16,000 sqm in 1962 to ~1,00,000 sqm in 2005, increasing the pedestrian volumes by ~35% (Initiative, 2026). In the similar lines, global countries like Netherlands, Italy, France, Japan, China etc. have prioritised pedestrianisation by transitioning from voluntary guidelines to mandatory frameworks legally binding the local authorities to design, build and maintain safe pedestrian spaces.

Need to set Quantifiable Targets

Several countries have set quantifiable targets for pedestrianisation for example, Bhutan aims to construct minimum 10 km of footpaths every year and cover over 75% of urban roads with NMT tracks by 2050 (UNCRD, 2024). Ethiopia targets to build 3 km of footpaths per 10,000 population by 2029 (ITDP, 2020). Similarly, the UK targets 5,000 new pedestrian routes and aims for 60% of the children to walk or cycle to school by 2035 (UK, 2026). These clear and defined targets give a strong push to the implementation authorities towards pedestrian prioritising development.

MoHUA has also developed service-level benchmarks for pedestrian infrastructure in the India cities (MoHUA, 2013). Various government schemes like AMRUT, Smart City Mission, etc. also support pedestrian and cycling infrastructure. However, on-ground gaps persist, due to poor enforcement measures. The city master plans need to identify clear pedestrianisation targets and implementation authorities for effective enforcement.

Delhi Master Plan 2047: An Opportunity to Priorities Pedestrians on Roads

Delhi recognises pedestrian safety as an important concern aiming to create a safe, walkable environment for its citizens. The recently launched Delhi Master Plan 2047 (MPD-2047) focuses on Right of Way (ROW) for pedestrians and prioritises retrofit existing streets and designing new streets to ensure safe, barrier free movement of pedestrians and cyclists. MPD focuses on development of multi utility zones (MUZ) consisting of street furniture, restrooms, childcare rooms, drinking facilities, street vendor kiosks, utility pipelines (gas, optic fiber etc.), space of parking while ensuring barrier free walkable space for pedestrians (PIB, 2026). Again, an implementation plan shall be crucial to translating the vision into reality.

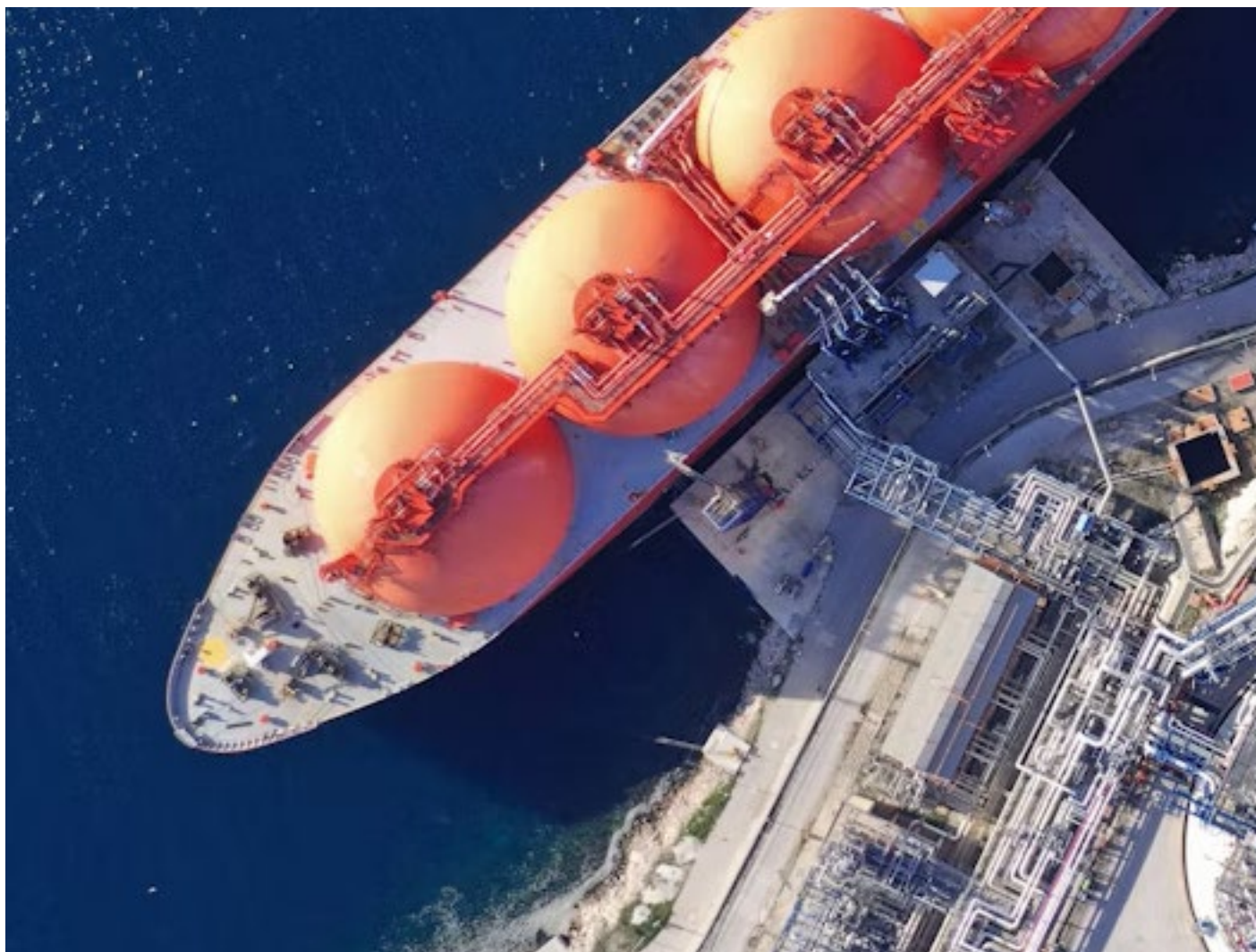
Key Actions to Transform the Rights on Paper to Rights on Ground

Bridging the gap between judicial order and on-ground reality requires stringent enforcement measures. The design for pathways needs to be continuous, barrier free, with adequate lighting inclusive for children, elderly and differently abled people. Proper designated spaces should be allocated to hawkers and parking motor vehicles to avoid encroachments.

Cities should set quantifiable pedestrian infrastructure targets with identified implementation agencies. A top-to-down governance approach can be followed to ensure efficient enforcement. The key ministries, including the MoHUA, MoRTH, can develop a national framework for pedestrianisation. ULBs can ensure maintenance of the pathways with dedicated and innovative financial mechanisms. For example, Pimpri Chinchwad Municipal corporation has raised Rs. 200 crores through municipal bonds specifically for the development of pedestrian and cycling infrastructure under Harit Setu Project (ITDP, 2026).

The framework must also consider imposing strict penalties on the violators for defacing and unauthorised use of the footpaths. The fines and penalties can also be used by the ULBs and used for maintenance activities. Regular independent pedestrian infrastructure assessments must be taken place for the built environment and before sanctioning any road development project to strengthen accountability. It is high time to translate the right to walk from right on paper to reality on ground through implementation of quantitative targets, determining accountability through constructive policy and governance initiatives.

The views expressed are personal.



Gas Reserve Mechanisms and Flexibility Options: Strengthening Security in a More Complex Market

A new report by the International Renewable Energy Agency says global gas markets have faced two major energy crises in five years. The first followed Russia's full-scale invasion of Ukraine in 2022-2023. The second was the closure of the Strait of Hormuz during the 2026 Middle East conflict.

These events showed that extreme situations can seriously affect import-dependent economies in Europe and Asia.

The report says well-functioning gas markets remain the first line of defence against supply disruptions. Price signals, commercial incentives and international reallocation of liquefied natural gas allowed supplies to move to regions with the greatest need and willingness to pay.

This helped reduce more severe physical shortages. Market flexibility is therefore essential to gas security. However, market-based reallocation alone may not be enough during acute stress.

When global supply is very tight, competition for cargoes can cause extreme price volatility, increase economic damage and sometimes fail to prevent physical shortages. These risks make physical reserves, emergency response arrangements and coordinated policy measures important.

Long-term supply security depends on investment across the gas value chain, diversified supply sources, robust infrastructure and appropriate contracts. The report focuses on medium-term measures that importing countries, and where appropriate groups of importers and exporters, can take to strengthen resilience against short-term shocks.



Many build on existing infrastructure, commercial arrangements and market structures, so they do not require major new physical investment.

Resilience comes at a cost. Strategic reserves, commercial flexibility and unused capacity involve premiums paid by consumers, taxpayers or market participants. But recent crises show that the cost of being underprepared can be much higher.

There is no one-size-fits-all model because countries differ in resources, infrastructure, geography, import dependence, market design and regulation. The right mix of physical reserves, commercial flexibility and policy tools will vary.

The global gas market has become structurally and geopolitically more complex since 2022–2023. Geopolitical risks, trade fragmentation and weather sensitivity have increased. Europe has less pipeline import optionality. Future disruptions and price volatility remain significant risks despite expected stronger LNG supply.

Physical reserves are essential but not sufficient. Underground gas storage, LNG tanks and floating storage can help, but they are limited by geography, infrastructure, commercial incentives and technical constraints.

New storage requires large investment and long lead times. Commercial flexibility can be strengthened through more flexible contracts, commercial innovation and greater use of LNG swaps. Policy-based mechanisms should be tailored to national circumstances.

Options include mandatory storage obligations, strategic reserves and buffer LNG schemes. Cross-border arrangements, shared infrastructure, coordinated emergency planning and knowledge sharing can improve resilience.

International cooperation is essential. The IEA oil emergency response framework offers lessons for voluntary gas reserve mechanisms.

The Month The World **Stopped** Selling Diesel

Russia and China closed the tap, Washington threatened to. India's crude bill rose ₹2.7 lakh crore in five months — and our refineries are not the hedge we think they are.

By Dr. Rahul Walawalkar

In August, Russia bought refined fuel from India. Around 170,000 tonnes arrived by sea that month, roughly 3 times what Russia imported in all of 2025. The world's third-largest oil producer, until recently the second-largest diesel exporter on earth, is now buying finished product from a country that imports 88% of the crude it runs. The sequence took about 8 months. Ukrainian drone strikes knocked out a large share of Russian refining capacity, by Kyiv's own claim more than 40%. Moscow banned gasoline exports through January, diesel through this month, jet fuel through November.

China then suspended fuel exports outright in October, protecting a domestic market on multi-year-low inventories. And the United States, with pump diesel above \$6 a gallon and midterms five weeks away, told Germany and France to release 120 million barrels from emergency stocks or face an American export ban.

2 of the 4 largest refined product exporters closed their taps inside a single month, and the largest threatened to. What people don't realize is how different this failure mode is from the one our energy security planning was built for. Crude is available. Refined product is not, because the governments that own the refineries decided their own citizens come first. You cannot hedge that with a reserve you have nowhere to refine on the day you need it.

The bill has already landed here. India's crude import bill for April to August was just over ₹7 lakh crore, against roughly ₹4.3 lakh crore in the same months last year. That is ₹2.7 lakh crore of additional outgo in 5 months, on marginally lower volume. And here is the part worth dwelling on. In dollar terms the rise was 48%. In rupees it was 62%.

The 14-point gap is the currency, and it is the reason an oil shock lands harder on an Indian balance sheet than the headline crude price suggests. Import dependence sits at 88% and has not meaningfully moved in 3 years. Our refining capacity does not change that. It hedges price, not exposure — every barrel we refine is still a barrel we bought.

The good part is that India has already run this play once, and it worked. Ethanol blending crossed 20% ahead of schedule, has been mandatory at every petrol pump since April, and has saved well over ₹1.4 lakh crore in foreign exchange. A demand-side intervention delivering import reduction at national scale, executed inside a decade. But look at what it touched. Ethanol blends into petrol.

The fuel three governments just stopped exporting is diesel, and the diesel pool has no E20 standing between an Indian freight operator and whatever the refined product market decides next.

DR. RAHUL WALAWALKAR

Founder & President,
NETRA (NetZero Energy Transition Association)



So the durable answer sits on the demand side, and India is moving faster there than the import figures suggest. The 12 months to September recorded over 32 lakh electric vehicle registrations. Electric two-wheelers crossed 15.6 lakh in the first 9 months of this year alone, already past the whole of 2025, and now take 11.6% of their segment against 8.2% a year ago. Electric car registrations nearly doubled year on year in September.

Most striking, passenger three-wheelers are now above 55% electric. The ownership arithmetic for a commercial operator simply stopped being a close call. Which is the pattern worth noticing. Where the economics are unambiguous at the level of a buyer's actual usage, adoption runs ahead of every official forecast. Where they are ambiguous, it stalls, however attractive the sector-level numbers look.

This is the part of EV policy we have consistently underweighted. We argue about aggregate penetration targets when the binding question is a matching problem. Whether an electric vehicle beats its diesel equivalent turns on daily running distance, duty cycle, charging access, resale horizon and financing cost.

Those 5 variables give very different answers for a Delhi fleet operator, a Pune commuter and an inter-city logistics firm. For some users the honest answer today is a hybrid, and I would not pretend otherwise. Battery electrics at 8.5% and strong hybrids at 2% together crossed 1 in 10 passenger registrations in September for the first time, and both halves of that number matter. The comparison is segment by segment, never a binary.

But most buyers have no way to run that calculation for themselves. They get sticker prices and national averages. Neither tells them what the vehicle costs over 7 years, or whether charging access on their route makes the question moot. Websites such as watt2Buy.org, that match specific users to the right vehicle on total cost of ownership are the missing layer between a favourable national picture and an actual purchase. The capability is not exotic. Take a buyer's actual running pattern, their local electricity and fuel tariffs, financing terms and expected holding period, and the comparison resolves into a number they can act on this week.

What that changes is behaviour, and this is the underappreciated part. A large share of Indian buyers are sitting out, waiting for the next subsidy announcement or a deeper discount, because nobody has shown them the switch already pays in their case. Demonstrate it in their own numbers rather than a national average and a waiter becomes an adopter, without a rupee of additional public money. That is the cheapest acceleration available to us, and it is sitting unused.

Which is where the data and AI conversation turns concrete rather than decorative. Bangalore Climate Data Week runs from 12 to 16 October, convened by the Climate Collective Foundation. Worth attention, because the agenda sits squarely on the gap I have described.

The useful application of AI here was never going to be another forecasting dashboard. What it can do is compress the commercialisation cycle itself.

Duty-cycle simulation against real telematics instead of waiting on pilot fleets. Finding viable segments before you build for them. Modelling battery degradation under Indian conditions rather than importing someone else's assumptions. Product cycles here run 3 to 5 years from concept to market. Several of those stages can now run in parallel, on data we already hold, and the gap between a 4-year cycle and an 18-month one compounds into something very large by 2030.

None of which touches the thing that actually binds. That is not technology cost, and has not been for years. It is financing. A fleet operator replacing diesel trucks, a farmer replacing a pumpset, a small firm electrifying a depot — each is asked to convert a running fuel expense into an upfront capital commitment, usually without credit priced for the asset's life. The oil shock improves their arithmetic. It does nothing about their balance sheet. If this autumn's lesson is that India should cut its exposure to a market that can close in a month, the instrument that follows is financial. Risk guarantees. Aggregation structures that let small borrowers be underwritten as a pool. Tenors matched to asset life rather than a lender's comfort.

Let me not oversell any of this as a fix for the present crisis. It is not. Nothing started today changes what India pays for diesel this winter. The argument is about the next shock rather than this one, and about 2030 rather than this quarter. Diesel is 41% of our petroleum consumption and rising, and the share burned in commercial fleets, farm pumpsets and backup generation is large enough that a serious dent in it would show up in the national import bill rather than in a press release.

That gives a reasonably clear sequence for the next 18 months. Settle the matching question first, because segment-level TCO evidence is what converts a favourable national picture into purchase decisions, and the data and modelling capability to do that already exists in this country. Build the financing instruments second, because they are what the evidence runs into the moment a buyer says yes. Then let procurement follow, corridor by corridor and depot by depot, rather than through another aggregate target nobody is accountable for. None of that requires a technology we do not have.

Every litre displaced from a genset, a pumpset or a delivery fleet is beyond the reach of whatever Moscow, Beijing or Washington decides next. That is a sovereignty argument before it is a climate one, and I suspect it reaches people the climate framing never did. It is high time we stopped running electrification and energy security as separate conversations, in separate ministries, with separate vocabularies. The last five weeks have made the connection about as explicit as it will ever get. The cheapest barrel is still the one we never have to buy.

The views expressed are personal.

GREEN HYDROGEN

STRATEGIC PARTNER



GH2 India

INDIA GREEN HYDROGEN MARKET SENTIMENT, OCTOBER 2026

India's Green Hydrogen Market Enters Its Execution Test with National Ports Inviting Partners and Investment.

Standfirst: Ports are courting investors, hub planning is under way and export corridors are taking shape. What the market now needs is firm demand, certain grid access and patient capital.

India's green hydrogen sector spent the opening weeks of October in an unusual mood: confident about the infrastructure, cautious about the order book. Across port forums, policy roundtables and investor meetings, the message was consistent. The physical and institutional building blocks are falling into place faster than binding demand. MNRE has called for proposals to fund DPRs to the tune of 3 crores each in hubs and ports.

That gap now defines the market. Price discovery has been strong; SECI's green ammonia auctions for fertiliser offtake set record-low prices in 2025, with winning bids ranging from about INR 50 to INR 64 per kg. Yet electrolyser makers, port authorities and developers all describe the same constraint: too few signed offtake contracts to move projects from feasibility to final investment decision (FID).

Grid access is the quiet gating factor

Ask developers what is slowing FID and the answer is less often the electrolyser than the transmission line. Green hydrogen and green ammonia projects commissioned on or before 31 December 2030 qualify for a full waiver of inter-state transmission system (ISTS) charges for 25 years. For projects that typically need around 30 months from FID to first molecules, that deadline is already close.

Industry sentiment is that connectivity certainty, under the General Network Access framework, now matters as much as the waiver itself. Where connectivity timelines are uncertain, lenders hesitate and FIDs slip. Several developers are looking for clarity on how connectivity rules apply to hydrogen loads, and for the waiver window to reflect realistic project timelines.

Hubs move from designation to design

The hub agenda took a practical step on 28 September 2026, when SECI issued a call for proposals under Component B1 of the National Green Hydrogen Mission (NGHM). Selected agencies will prepare detailed project reports (DPRs) for cluster-based green hydrogen hubs, covering site assessment, techno-commercial viability and shared infrastructure. MNRE has allocated INR 28 crore, with support capped at INR 3 crore per DPR and one DPR per selected state or Union Territory.

Ports are where this is most visible. On 7 October, Deendayal Port Authority at Kandla hosted the Kandla Forum, themed "Anchoring Maritime Decarbonisation", as the site visit for the Hydrogen Council's business forum. More than 200 senior executives from 62 Hydrogen Council member companies joined Indian developers, manufacturers, shipbuilders and financiers. The format was deliberately commercial: sector-wise interaction on electrolyzers, ammonia, methanol, bunkering and shipbuilding, followed by a visit to the port's operating 1 MW green hydrogen plant and its upcoming e-methanol facility.

Nishaanth Balashanmugam
Director & CEO, GH2 India



The port's pitch was land, power, water and a completed methanol bunkering trial. The stated aim was to convert expressions of interest into projects. That framing, of ports as investment platforms rather than landlords, is now shared across Kandla, Paradip and V.O. Chidambaranar.

Export corridors need matching rulebooks

European ports were present in force at maritime events in early October, and their message was that Europe will need to import a large share of its hydrogen and derivatives. Corridor thinking is maturing, with ports along the India–Middle East–Europe Economic Corridor (IMEC) discussing how energy, logistics and digital links can be developed together.

The friction is regulatory. Developers point to misalignment between EU rules for renewable fuels of non-biological origin (RFNBO) and the emerging IMO framework for shipping fuels. As the EU's post-2030 renewable energy framework takes shape, Indian exporters are asking how certification can travel with the molecule. Interest is growing in book-and-claim approaches built on existing certification, which would let distant suppliers compete on carbon intensity rather than geography.

On the demand side, shipping offers the clearest near-term pull. Cargo owners with Scope 3 targets are looking for ways to aggregate demand for green fuels, using accounting standards such as the GLEC Framework and ISO 14083. Linking that cargo-owner demand with Indian fuel producers is widely seen as one of the sector's largest untapped opportunities.



Manufacturers and financiers wait on the same signal

The demand gap is now visible in manufacturing. In September, Larsen & Toubro's electrolyser business was reported to be holding production at 400 MW and deferring a planned 1 GW expansion, citing weak green hydrogen demand. Industry participants describe domestic stack and system capacity running ahead of firm orders, with key components such as membranes still imported. Several other players with announced electrolyser production have not build any capacity yet.

Financiers frame the problem as a familiar chicken-and-egg loop. Ports hesitate to build bunkering without demand, shipowners hesitate to commit without fuel availability, and producers hesitate to invest without guaranteed offtake. Development finance institutions see their role in closing the gap between a promising idea and a bankable project, through feasibility funding, blended finance and guarantees. Early-stage development equity remains the scarcest form of capital.

Against this backdrop, a broader argument is gaining ground: that green hydrogen should be treated as strategic national infrastructure, much as semiconductors have been. The case rests on energy security and on India's potential role as a long-term supplier to Japan, Korea and Europe. Supporters argue that such recognition would help align transmission, land, water and approvals across ministries and states.

What the market is watching next

The next six months will test whether momentum turns into money. Four signals matter most:

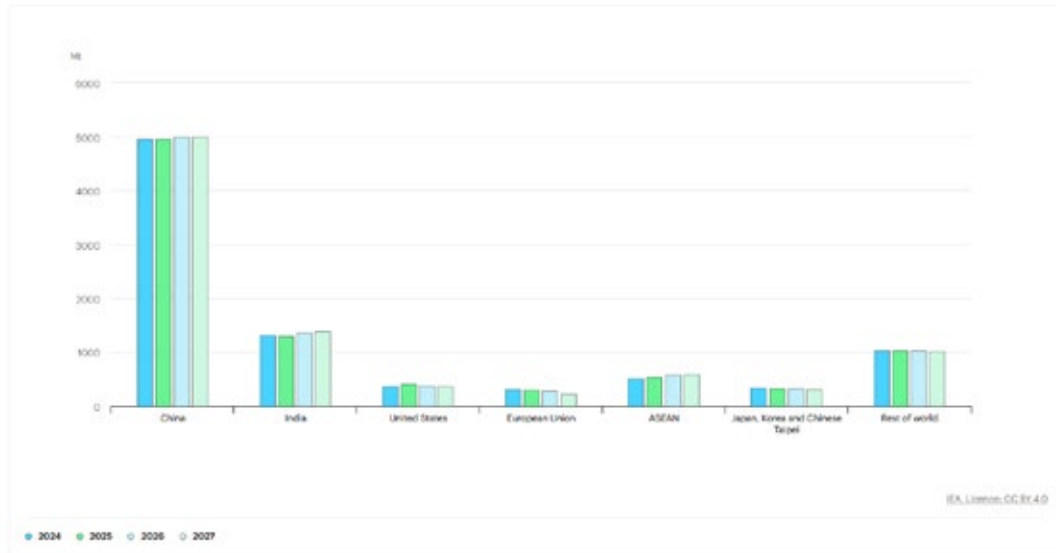
- Demand instruments: further domestic offtake tenders, and progress on export procurement through mechanisms such as H2Global and bilateral schemes with Japan and Korea.
- Grid certainty: clarity on connectivity for hydrogen loads and on the ISTS waiver window for projects that cannot commission by end-2030.
- Hub DPRs: the quality of proposals under SECI's Component BI call, and whether states commit land, water and common infrastructure behind them.
- Certification alignment: whether EU and IMO frameworks converge enough for Indian molecules to be certified once and sold into both.

The infrastructure story is credible and the cost story is competitive. The market's mood will turn on how quickly signed contracts follow.

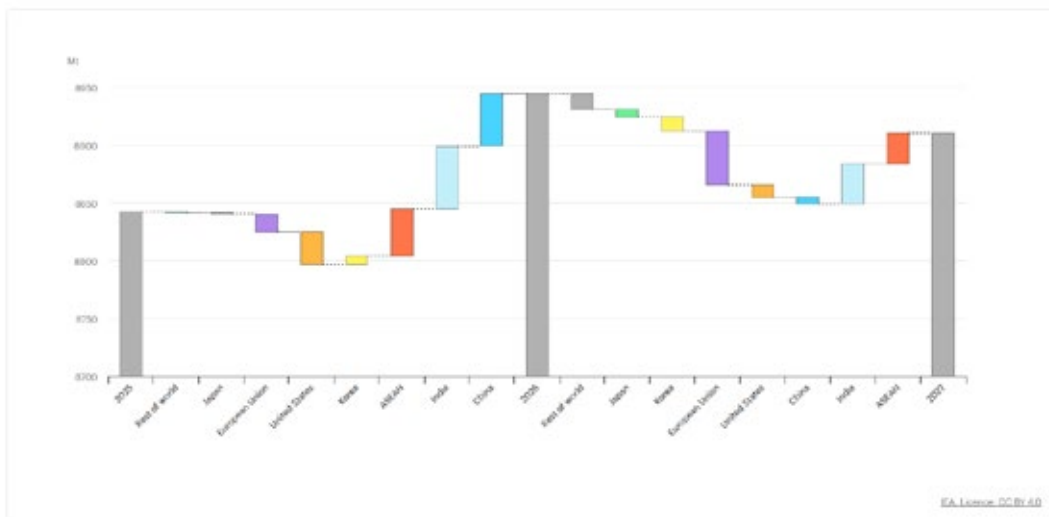
INDUSTRY GRAPHICS

Industry Graphics Oct'26 – Coal Mid-Year Update 2026 (IEA)

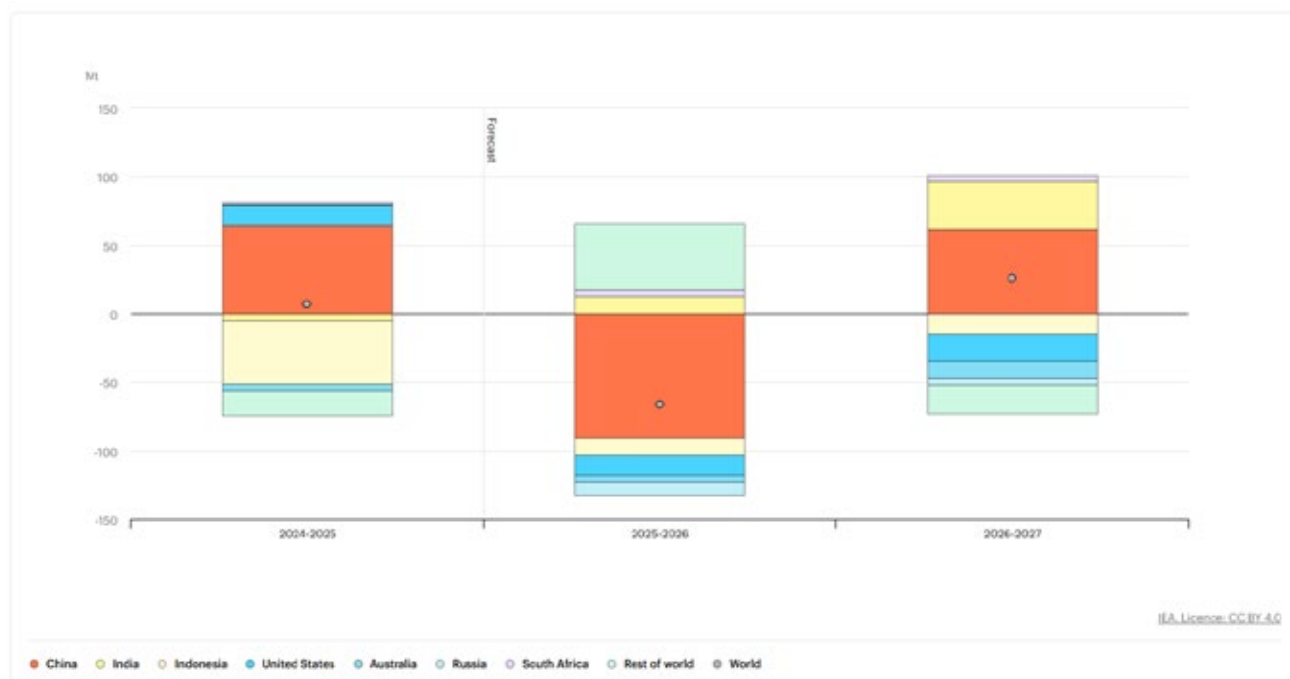
Get your firsthand information on key global energy trends through a set of data visuals sourced from the International Energy Agency's Coal Mid-Year Update 2026. The Middle East conflict has affected global energy markets, indirectly increasing interest in coal. As natural gas prices rise, some countries are turning to coal for electricity and relying more on domestic supplies. The report looks at global coal demand, production, trade and prices, and forecasts trends for 2026 and 2027.



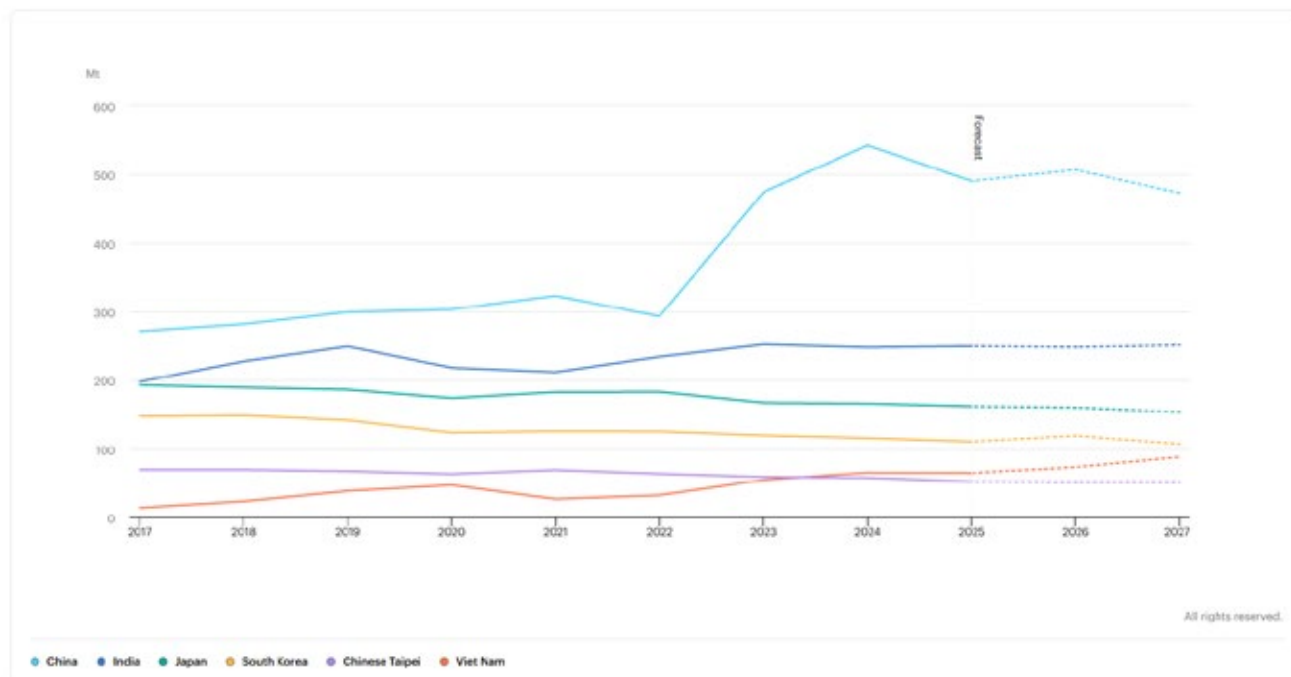
Global coal consumption is expected to remain high through 2027, despite the growth of renewable energy. While coal use is declining in some developed countries, rising demand in India and Southeast Asia is keeping consumption high. This highlights the continued dependence on coal and the challenges of shifting towards cleaner energy sources.



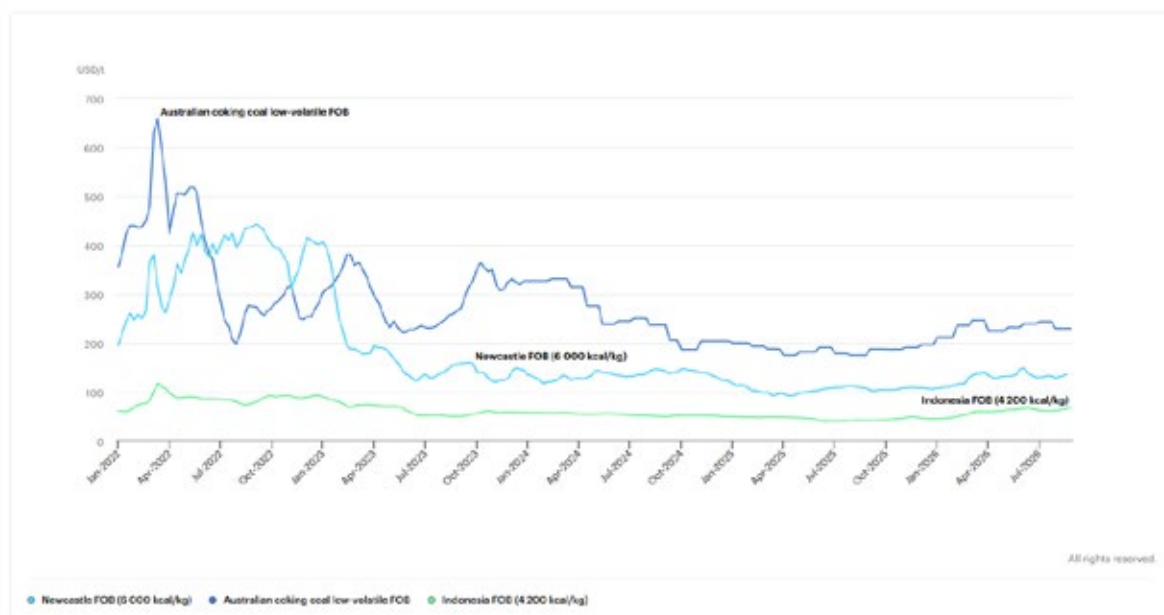
Coal consumption is expected to fall in Europe and some Asian countries but rise in India and Southeast Asia between 2025 and 2027. China will play a major role in shaping global demand. These differences show that while some regions are moving away from coal, others continue to depend on it for energy.



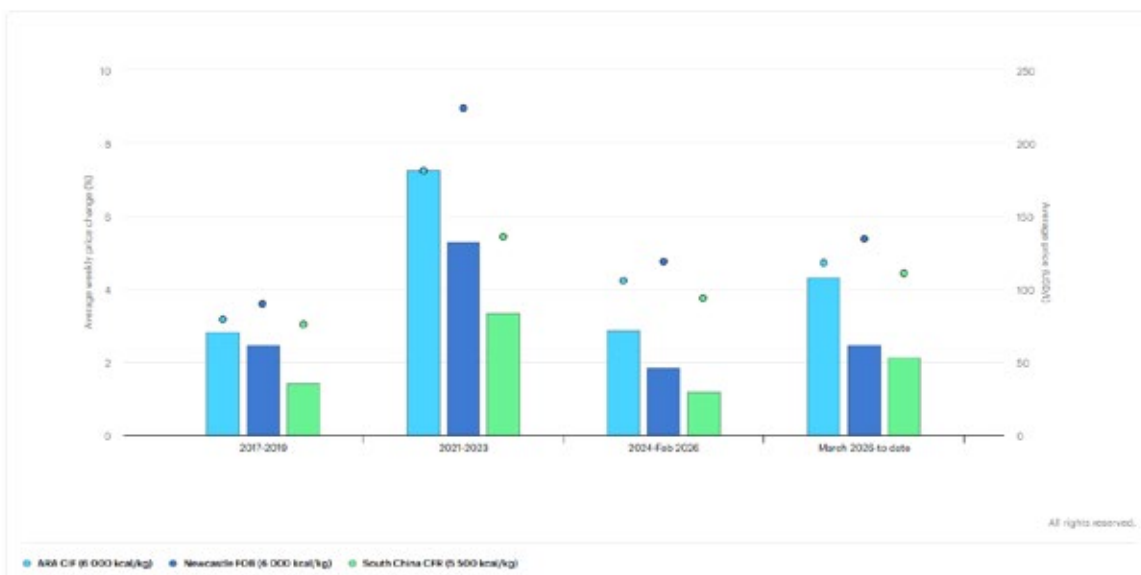
Global coal production will remain high but begin to decline slightly by 2026, before recovering modestly in 2027. India is expected to increase production, while China's output is likely to recover after a temporary fall. Declining output in countries such as Indonesia, the US and Australia reflect changing market conditions and demand.



Coal imports across Asia are following varied trends. While imports by China, Japan and South Korea are expected to weaken, Southeast Asian countries are likely to see growing demand. India's imports are projected to ease in the near term, highlighting the region's continued reliance on coal despite the shift towards cleaner energy.



Coal prices surged in 2022 due to the global energy crisis but declined through 2024 and 2025. Higher-quality thermal coal and coking coal remained more expensive than lower-quality coal. The trend suggests that markets have stabilised since the crisis, although prices remain sensitive to supply disruptions and changing global demand.



Thermal coal prices rose sharply during the 2022 energy crisis before falling in 2024 and 2025. In 2026, prices show signs of recovery. This suggests that coal prices have become more stable but remain affected by changes in global demand and supply disruptions.



GAIL (India) Limited



INDIA'S NATURAL GAS LEADER

Energizing Possibilities

 Contributing 53% of the Natural Gas sold in India.

 Around 68% market share in Natural Gas Transmission in India.

BIO-ENERGY

STRATEGIC PARTNER



POINT OF VIEW

The Indian Biogas Association (IBA) has long argued for predictable pricing and assured offtake. September delivered both, and tied capital support to plants that actually run. The question has moved from whether the policy is adequate to whether execution will match it. Four tests will decide that.

1. The three-month clock on distributors. Every delayed agreement will be read by lenders as a signal.
2. Feedstock. A 75 per cent load factor needs year-round supply, which makes aggregation depots, baling fleets and dung collection clusters as important as digesters.
3. Fermented organic manure. The price framework builds in an incentive for selling manure, yet the market for it remains thin. Plants need dependable buyers and a clear place in fertiliser policy.
4. Municipal waste. Plants running mainly on urban waste or sewage sit outside the capital assistance and are referred to housing ministry schemes. Cities should not fall between two ministries.



DR. A.R. SHUKLA
President
Indian Biogas Association

Europe's month carries a lesson too. Markets there now pay for biogenic CO₂ and certified attributes on top of the gas. India should design its registry and certificate framework early, so that plants built under GOBARdhan can earn those revenues later.

The IBA expects more than ₹2,800 crore of bioenergy investment interest around the Renewable Energy India Expo in Greater Noida on 22–24 October. The rulebook is written. The next twelve months are about commissioning dates.

POLICY STANCE

September 2026 was the month India's compressed biogas (CBG) policy became a contract. On 15 September the Ministry of Petroleum and Natural Gas notified operational guidelines for all six components of the ₹23,731 crore GOBARdhan scheme, in force from 1 September and running to FY2035–36. Five earlier programmes, SATAT among them, now sit under one roof.

The numbers matter. Producers get an administered price of ₹2,110 per MMBtu, about ₹100 per kg at 95 per cent methane, before taxes and compression. It holds until at least March 2036 and is reviewed annually. They can seek offtake for up to 100 per cent of saleable gas.

City gas distributors carry a blending obligation of 3 per cent this year, 4 per cent next year and 5 per cent from FY2028–29. They must sign a tripartite agreement with the producer and GAIL within three months of a complete request, or risk a cut in their gas allocation.

Capital assistance is ₹1.25 crore per tonne per day, capped at ₹30 crore per project. Half is released only after the plant proves itself: in full at a 75 per cent plant load factor, nothing below 50 per cent. Add 50 per cent pipeline cost-sharing, an 85 per cent credit guarantee for MSME projects and a ₹500 crore challenge fund that ranks districts on clearances and feedstock mapping. The state is paying for plants that perform.

The direction abroad was the same. The US Treasury's Notice 2026–53, issued on 8 September, gave renewable natural gas from dairy and swine manure and food waste recognised pathways under the 45Z clean fuel credit. Czechia's first biomethane auction drew 63 projects offering 176.4 million cubic metres a year against 45 million sought. Malaysia opened a 250 MW feed-in quota for 2027 that covers biogas.

NEWS & TRENDS

Capital responded quickly at home. Two days after the guidelines, Petronet LNG's board approved a 50:50 venture with Gruner Renewable Energy for ten CBG plants of 18 tonnes a day each. That is a ₹1,200 crore commitment from India's largest LNG importer.

An Equirus report put national potential at 62 million tonnes of CBG a year from 472 million tonnes of feedstock, with animal waste contributing 41 per cent. It also cautioned that only about 15 per cent of dung is collectable today, and that crop residue must be gathered within roughly 45 days. Punjab submitted a roadmap for zero stubble burning by 2030 that leans on CBG and biomass to absorb paddy straw.

Abroad, three trends stood out.

- Consolidation. Kanadevia Inova took a majority stake in Dutch platform BioValue, Vanguard Renewables agreed to acquire Generate Upcycle's North American business, and VORN Bioenergy added five Italian plants.
- Carbon dioxide as a product. INEOS began commercial operation of its Greensand offshore storage site in Denmark, fed mainly by biogenic CO₂ from biomethane plants.
- Certification catching up with logistics. ISCC set rules allowing grid-injected biomethane to be certified as bio-LNG through virtual liquefaction. Türkiye's industry body, meanwhile, estimated the country could reach 10 billion cubic metres of biomethane a year by 2040.

One development deserves attention beyond biogas. Washington's new American Biofuels Trade Outlook names India as a strategic market for on-road ethanol. India's bioenergy story has been built on domestic feedstock and farmer income, and that principle should guide any conversation on market access.



WHAT MADE NEWS

WHAT MADE NEWS

01

Pralhad Joshi to inaugurate Windergy India 2026 in Chennai

CHENNAI: Union Minister Pralhad Joshi will inaugurate Windergy India 2026 on October 8 at Chennai Trade Centre. India added a record 6.05 GW wind capacity in FY26, reaching 58.52 GW by August 2026, with 28 GW under implementation. The October 7-9 event features 400 exhibitors from over 20 countries, supporting the 100 GW by 2030 target. (ENERSIDER DESK)



02



India's battery storage demand to hit 236.22 GWh by FY32, require Rs 3.49 trillion investment: Report

NEW DELHI: India's battery energy storage demand is projected to surge nearly seven-fold to 236.22 GWh by FY32, requiring Rs 3.49 trillion investment, per Rubix Data Sciences. BESS additions hit 8.2 GWh in Jan-Jun 2026, with 9.08 GWh operational and 79.92 GWh under construction. BESS share in storage will rise to 57% by FY32. The Rs 1.86 trillion PM-DHARA scheme supports 50 GWh. (ANI)

03



Ministry of New and Renewable Energy organises Plantation Drive under "Ek Ped Maa Ke Naam" Initiative

NEW DELHI: The Ministry of New and Renewable Energy organised a plantation drive at Atal Akshay Urja Bhawan under the "Ek Ped Maa Ke Naam" initiative. Secretary Santosh Kumar Sarangi and senior officials planted trees, encouraging staff to enhance green cover and sustainable practices. The drive reflects MNRE's commitment to a greener future. (ENERSIDER DESK)

04



PSPCL steps up transmission capacity as Punjab power demand hits record 17,452 MW

CHANDIGARH: PSPCL is augmenting Punjab's transmission network to meet record power demand, which hit 17,452 MW in July 2026 and is projected at 17,873 MW in 2026-27. The utility is also intensifying action against power theft and line losses. Total energy requirement for 2026-27 is estimated at 86,228 MUs. (ENERSIDER DESK)

05



KPTCL commissions 12-km 220 kV transmission line to strengthen Bengaluru grid

BENGALURU: KPTCL has commissioned a 12-km 220 kV multi-circuit transmission line, providing double LILCO connectivity to the Hoodi-Manyata Tech Park network. The project boosts grid capacity and reliability amid rising power demand, executed despite urban space and infrastructure constraints. (PTI)



Annual Business Conclave 2027

The Energy Dialogues

2ND
EDITION

MARCH 2027

Where India's Energy Future Moves From Ambition To Action.

2-DAY CONFERENCE • MASTERCLASS • AWARDS NIGHT • GALA DINNER



POLICY



CAPITAL



TECHNOLOGY



BUSINESS



LEADERSHIP

A high-level platform bringing together the people building, financing, regulating and transforming India's energy economy.



FOR MORE DETAILS, CONTACT: PARTNERSHIPS@ENERSIDER.COM

06

GUJARAT INJECT (KERALA) LIMITED

Gujarat Inject (Kerala) Limited Accelerates Clean Energy Pivot: Reports Robust Revenue Growth and Secures INR 4.86 Crore Solar Order

AHMEDABAD: Gujarat Inject (Kerala) Limited is accelerating its clean energy pivot, signing an investment sale agreement with Soleos Energy and amending its charter for BESS and EV charging. It recognized INR 2,076.45 lacs as CWIP for a solar project and secured a INR 4.86 crore order for 3,600 solar PV modules. FY26 revenue nearly doubled to INR 3,632.04 lacs. **(ANI)**

07



Marsons to form JV with US-based Cleanhill Partners to tap North American market

MUMBAI: Power transformer manufacturer Marsons has agreed to form a joint venture with New York-based Cleanhill Partners to scale transformer distribution, servicing and manufacturing across the US and Canada. The partnership aims to address North America's critical transformer shortage, where lead times exceed 24 months amid rising demand from grid modernisation, renewable energy and data centres. Marsons operates a plant with 12,000 MVA annual capacity, expanding to 26,000 MVA, and plans local manufacturing in North America. **(PTI)**

08



PM Modi outlines ambitious goals for Viksit Bharat 2047, says "nation's energy outstanding"

NEW DELHI: Prime Minister Narendra Modi outlined ambitious goals for Viksit Bharat 2047, including a top-three economy, Atmanirbhar Bharat, global manufacturing hub, hosting the Olympics and strides in space. Reflecting on 25 years in governance, he invoked 'Sabka Prayas' and said the nation's extraordinary self-confidence will overcome all hurdles. **(ANI)**

09



Ministry of New & Renewable Energy completes Preparatory Phase of Special Campaign 6

NEW DELHI: MNRE and its CPSUs and autonomous institutes completed the Preparatory Phase of Special Campaign 6 from September 15 to 30, 2026. Activities included disposal of pendency, record weeding, cleanliness drives and e-waste segregation. The Implementation Phase runs October 2 to 31, targeting pendency disposal and cleanliness. IREDA, SECI, NISE, NIWE and SSS-NIBE participated. **(ENERSIDER DESK)**

10



Keralam seeks dedicated power plant from NTPC to meet long-term energy needs

NEW DELHI: Keralam CM V D Satheesan said decisions were taken with NTPC CMD Gurdeep Singh to meet the state's long-term energy needs. These include a 2,000 MWh BESS at Kayamkulam, two 80 MWh storage projects by March 2027, up to 300 MW from NTPC's Sinner plant at ₹5.18 per unit, a 27 MW solar project, and a requested dedicated NTPC plant. **(ANI)**



2ND
EDITION

**CELEBRATING
ARCHITECTS OF
THE FUTURE**
Award Show

MARCH 2027

ENER SIDER
FUTURE
LEADERS
AWARD
SHOW
2ND EDITION



FOR MORE DETAILS, CONTACT: VANDANA@ENERSIDER.COM

WHAT MADE NEWS

WHAT MADE NEWS

11

India calls for stronger climate action, implementation of Paris Agreement at pre-COP31 in Fiji

NEW DELHI: Environment Minister Bhupender Yadav led India at Pre-COP31 in Fiji, urging stronger climate action and full Paris Agreement implementation. He stressed means of implementation, just transition, adaptation and climate finance, meeting UN and EU officials. COP31 will be held in Turkey in November. (ANI)



भारत सरकार
GOVERNMENT
OF INDIA



12



नवीन एवं
नवीकरणीय ऊर्जा मंत्रालय
MINISTRY OF
NEW AND
RENEWABLE ENERGY

Cabinet approves Green Energy Corridor Phase-III scheme for intra-state transmission and battery storage

NEW DELHI: The Union Cabinet has approved the Green Energy Corridor Phase-III scheme with a total outlay of Rs 1,86,405 crore. It will strengthen intra-state transmission to evacuate 135 GW of renewable energy and deploy 50 GWh of battery storage by FY33. Central support of Rs 54,082 crore will help achieve 900 GW non-fossil capacity by 2035. (ENERSIDER DESK)

13



Smartgrid Analytics
Company Profile - Overview

Smartgrid Analytics surpasses 107 GW in global renewable assets

BENGALURU: Bengaluru based Smartgrid Analytics has crossed 107 GW in global renewable assets commissioned through its Solvyn platform. In FY26, it delivered 12.4 GW of new capacity, with battery storage and hybrid projects rising to nearly half its revenue. Its technology supports over 500 projects across solar, wind, storage and green hydrogen. (PTI)

14



Adani Power, Bhutan's DGPC sign pact for 770 MW hydropower project; construction to begin in H1 2027

NEW DELHI: Adani Power and Bhutan's DGPC signed an agreement for the 770 MW Chamkharchhu-I hydropower project under a 49:51 equity partnership and BOOT model with a 30-year concession. Construction begins H1 2027, commissioning within six years. The project will meet Bhutan's winter demand and export surplus power to India. It is the second Adani-DGPC collaboration, part of a broader 5,000 MW partnership. (ANI)

15



InSolare Energy Unveils New Brand Identity, Marking Its Evolution into an Integrated Net Zero Solutions Provider

AHMEDABAD: InSolare Energy has unveiled a new brand identity, 'Innovating Net Zero Solutions,' marking its evolution from a solar EPC firm into an integrated clean-energy provider. With a 2.2 GW+ EPC portfolio, it now covers solar, wind, battery storage, green hydrogen, green ammonia and electrolyser manufacturing. The rebrand reflects technology-led growth across the clean-energy ecosystem. (ANI)

16

SECI celebrates 15th Foundation Day with Stakeholders' Meet

NEW DELHI: SECI celebrated its 15th Foundation Day with a Stakeholders' Meet. Minister Shripad Yesso Naik praised SECI's role in India's renewable transition. SECI has enabled over 41 GW of commissioned renewable capacity, 67 GW of power sale agreements and about ₹3.6 lakh crore in investments. Sessions covered green hydrogen and distributed renewables. Incorporated in 2011, SECI is a Navratna CPSE under MNRE. (ENERSIDER DESK)



69

WHAT MADE NEWS

17



Northern Railway's Jammu division expands solar capacity to 2.55 MW

JAMMU: Northern Railway's Jammu division is expanding its solar capacity to 2.55 MW, with 1.745 MW already operational at five railway premises including Jammu and Katra stations. Work is underway on 18 new plants adding 808 kWp, including a 450 kWp plant at Katra to be completed by December 2026. The initiative aims to cut emissions, power costs and grid dependence. (PTI)

18



Adani Green expands BESS capacity to 6.63 GWh, accounts for over 50% of India's operational capacity

NEW DELHI: Adani Green Energy has expanded its operational battery storage capacity to 6.63 GWh from 3.55 GWh in June 2026, accounting for over 50 per cent of India's operational BESS capacity. Commissioned at Khavda, Gujarat, it is the world's largest single-location battery installation. AGEL targets over 10 GWh in FY27 and 50 GWh in five years. (ANI)

19



NTPC power generation rises nearly 13% in Q2; coal dispatch, power trading also jump

NEW DELHI: NTPC generated 117.9 billion units in Q2 FY27, up 12.93 per cent year-on-year. Coal dispatch rose 28.45 per cent to 11.9 million tonnes, while power trading volumes grew 22 per cent to 15.06 BU. The company has over 91 GW installed capacity and targets 149 GW by 2032, including 60 GW from renewables. (ANI)

20



Siang hydropower project aims to regulate water storage: Arunachal Deputy CM

ITANAGAR: Arunachal Deputy CM Chowna Mein said the proposed 11,200 MW Siang Upper Multipurpose Project is mainly for water storage and regulation, not just power. With 9.2 bcm live storage, it could reduce downstream flood risks from China's upstream plans. The project faces local opposition; officials say pre-feasibility studies are ongoing and no final decision is made. (PTI)

INDUSTRY EVENTS

INDUSTRY EVENTS



INDIA

Renewable Energy India (REI) Expo 2026

Date: 22-25 October 2026

Venue: India Expo Mart, Greater Noida

Organised By: Society of Exploration Geophysicists (SEG)

Website: www.renewableenergyindiaexpo.com

The REI Expo unites visionaries, innovators, and decision-makers to unlock grid capacity and accelerate energy storage development. Through strategic discussions, deal-making, and project showcases, participants explore battery storage growth, government mandates, and investment opportunities, driving India's clean energy transition from concept to utility-scale reality. Collaboration accelerates India's progress.



INDIA

Bharat Renewable Energy Summit & Expo 2026 (BRE Summit & Expo)

Date: 2-5 November 2026

Venue: Bharat Mandapam, New Delhi

Organised By: Ministry of New and Renewable Energy (MNRE), Government of India

Website: www.bresummit.in

The Bharat Renewable Energy Summit & Expo is MNRE's flagship international platform uniting governments, policymakers, investors, innovators, and researchers. Through strategic dialogues, technology exchange, and knowledge sharing, it accelerates renewable energy deployment, fosters global partnerships, drives manufacturing and innovation, and advances a sustainable, resilient clean energy future.



SINGAPORE

Asia Clean Energy Summit (ACES)

Date: 26-30 October 2026

Venue: Sands Expo & Convention Centre / Marina Bay Sands, Singapore

Organised By: Sustainable Energy Association of Singapore (SEAS)

Website: www.asiacleanenergysummit.com

Asia Clean Energy Summit unites regional thought leaders from public and private sectors to advance clean energy technology, policy, and finance. Held within Singapore International Energy Week, it provides a platform for collaboration on critical issues and opportunities, accelerating Asia's transition toward a sustainable energy future.



RIYADH

25th WPC Energy Congress and Riyadh Energy Week

Date: 11-15 October 2026

Venue: Riyadh Front Exhibition & Conference Center, Riyadh

Organised By: Ministry of Energy of Saudi Arabia

Website: www.wpcenergy2026.org

Riyadh Energy Week unites global leaders and industry to shape the future of energy through high-level dialogue and cooperation. Featuring ministerial meetings and senior leadership engagements alongside the WPC Energy Congress, it facilitates open conversations on sustainable energy management, fostering international collaboration for the benefit of all.

For media partnership, contact: editor@enersider.com



Hyvolution
INDIA

17–18 November 2026
India Expo Mart, Greater Noida

Where Global Hydrogen Meets India's Clean Energy Ambition

OFFICIAL MAGAZINE

ENERSIDER

EVENT HOST

AEPL
Connecting Businesses, Accelerating Growth

CO-ORGANISED BY



For Space and Partnership: vinay.bhati@apoltosevents.com | +91 7838 230131



www.igha-hyvolution.com

ENERSIDER

p r e s e n t s

THE 100

— VANGUARDS OF INDIA'S ENERGY FUTURE —

2026 - 2027



www.enersider.com