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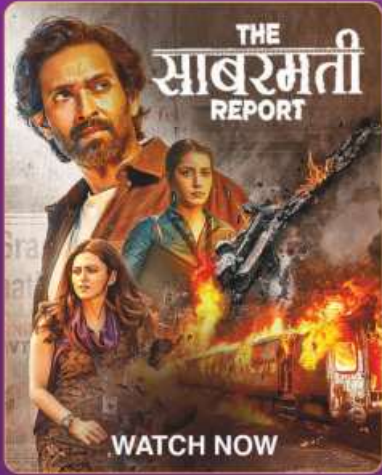
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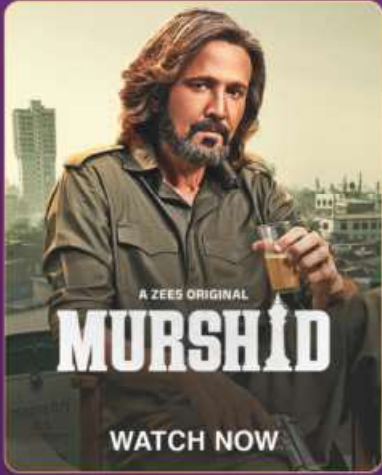
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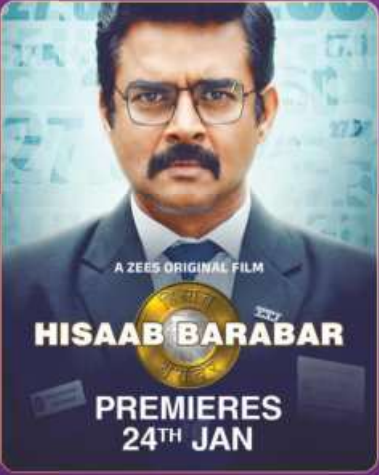
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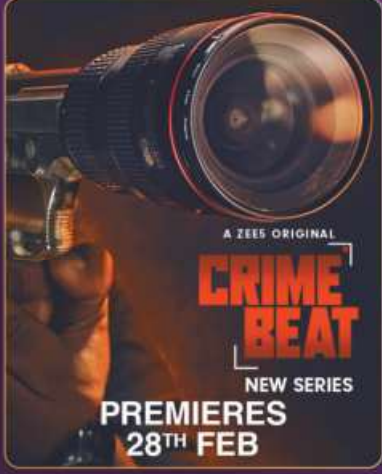
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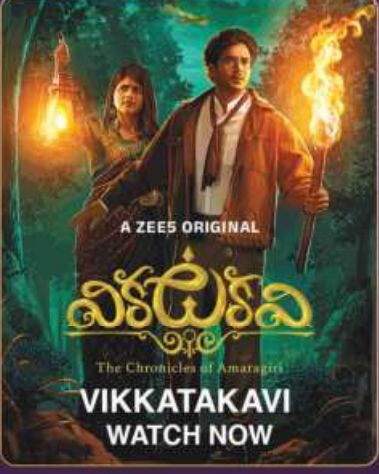
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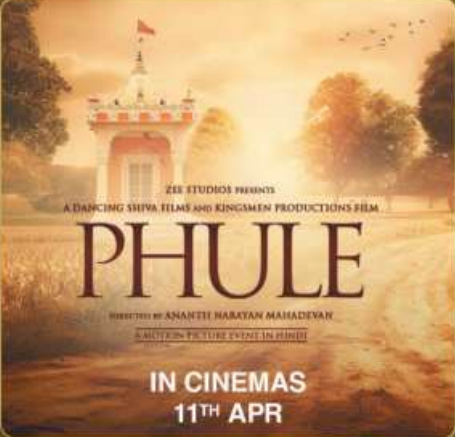
IN CINEMAS  
31ST JAN



IN CINEMAS  
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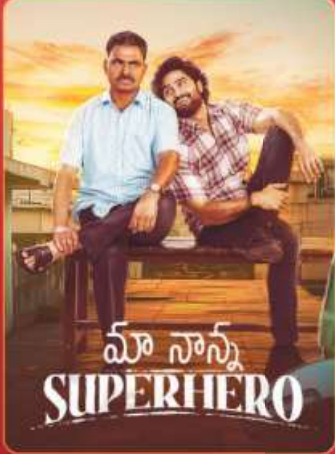


IN CINEMAS  
7TH MAR



IN CINEMAS  
11TH APR

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SA RE GA MA PA BANGLA



SONAR SANSAR  
AWARDS



HARIKATHA MANJARI



BHARJARI BACHELOR S2



DANCE  
JODI  
DANCE  
RELOADED 3



MAHANADIGAI  
GRAND FINALE



GAURAV PURASKAR



UNLIMIT  
AWARDS 2025

## CRICKET FEVER



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ZEE CLASSIC

ZEE नूतन

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ZEE पंजाबी

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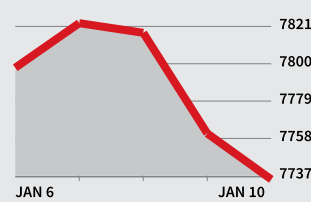
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# the hindu businessline

SENSEX 77378.91 (-1844.20)



IN FOCUS

	Week's close	Week's change
Nifty 50	23431.50	-573.25
P/E Ratio (Sensex)	22.41	-0.56
US Dollar (in ₹)	85.97	+0.20
Gold Std 10 gm (in ₹)	77706.00	+512
Silver 1 kg (in ₹)	90268.00	+2147

## PULSE.

**Soumya Swaminathan** on the lessons gleaned from Covid-19 and the ground to be covered in preparing for the next pandemic **p9**



## POLICY DISCUSSION.

**Top bankers will** hold talks with the RBI Governor on January 16 in the run up to the MPC meeting **p2**

BENGALURU - CHENNAI - COIMBATORE - HUBBALLI - HYDERABAD - KOCHI - KOLKATA - MADURAI - MALAPPURAM - MANGALURU - MUMBAI - NOIDA - THIRUVANANTHAPURAM - TIRUCHIRAPALLI - TIRUPATI - VIJAYAWADA - VISAKHAPATNAM

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## MONDAY SPECIALS.

### BRANDLINE

**CES 2025 shows how AI will own the year**



At the Consumer Electronics Show (CES), the influential tech event in Las Vegas that opens every calendar year and gives us a glimpse of trends to come, there was a flying car, a solar- and AI-powered helmet, an AI-powered radio, a robotic vacuum cleaner with arms, unusual wellness gadgets and plenty of other exciting stuff. **p6**

### LOGISTICS

**Railways targets more coal freight**

The Railways is set to redouble efforts to increase freight movement, with coal loading witnessing 8-9 per cent increase in both volume and value terms. Other major freight categories such as cement, raw materials and imported coal witnessed a decline in loading, according to the latest (January first week) figures from the national transporter. **p8**

# We aspire for double-digit growth: TCS head Krithivasan

**EMERGING TREND.** He sees AI beginning to move the needle in business

**Vallari Sanzgiri**  
**Thomas K Thomas**  
Mumbai



With tech spends expected to bounce back this year, K Krithivasan, Chief Executive Officer and Managing Director of Tata Consultancy Services (TCS), is now aspiring for double-digit growth.

Speaking about the company's growth since he took over as CEO in 2023, Krithivasan said, "I wouldn't say that (we have achieved what we set out to) because you'd want to have the biggest growth year-on-year. We have made good progress on the margin front but on the top line front, we have not achieved double-digit growth. I can blame this on market conditions but we are aspiring for such growth."

### 3 DEVELOPMENTS

Stating that the company's dealings had been strong across the board, Krithivasan attributed it to three developments: a strong pipeline in terms of deals, customer interactions that indicated some amount of returns or some discretionary spend and improvement in deal

“We have made good progress on the margin front but on the top line front, we have not achieved double-digit growth. I can blame this on market conditions but we are aspiring for such growth

**K KRITHIVASAN**  
CEO and MD of Tata Consultancy Services

closure. He viewed this as an improvement on the decision-making front but stressed that the developments were early signs.

Regarding the company's deal with BSNL for rolling

out the 4G telecom network, Krithivasan described the progress as "quite well" and "on track" with close to 70,000 sites already installed.

Of these, about 60,000

sites are carrying commercial traffic. He envisioned more difficulties for the last set of sites since these will be built in more remote areas.

"The reason that we got into the deal is based on the capability we built, we will be able to take it to other private players, both in India and outside of India, both on the 4G and 5G stack.

"Because of the unique nature of the solution, which is a very indigenous solution and makes it country independent from external influence on the critical infrastructure, we think it is a very strong value proposition," he said.

### ON AI IMPACT

Talking about the impact of AI on business, Krithivasan said that it is now beginning to move the needle.

"The needle is beginning to move. There are more programmes going into production and the maturity of adoption has improved," he said, adding that TCS will soon stop tracking the revenue coming exclusively from AI because the technology is becoming part of all projects.

**Interview p10**

# Direct tax mop-up may surpass budget estimates by ₹80,000 cr

**Shishir Sinha**

New Delhi

With strong growth in non-corporate tax, the net direct tax collection is likely to cross budget estimates by more than ₹73,000-83,000 crore. However, tax buoyancy is likely to be lower than the last fiscal due to the revision of the nominal growth number.

The Budget presented in July pegged the net direct tax collection at ₹22.07 lakh crore for FY25. This requires a growth rate of 12.6 per cent over the actual collection of ₹19.60 lakh crore in FY24. However, data for the period between April 1 and December 17, 2024, showed that while the mop-up through advance tax after three instalments grew by over 20 per cent, the net collection is now 72 per cent of the budget estimates.

This has boosted expectations about exceeding the target by a notable margin. This, along with good growth in GST, is expected to help the government push the fiscal deficit lower than the budgeted estimate of 4.9 per cent for the current fiscal.

Though the Income Tax Department has not given any reasons for the rise in collections, it is believed that the ease of compliance and

## Direct taxes

FY	Net Collection	Nominal GDP	Direct Tax-GDP Ratio	Nominal GDP growth rate	Tax growth rate	Buoyancy Factor
		(₹ lakh cr)		(in %)		
2021-22	14.12	235.97	5.97	19.34	49.12	2.54
2022-23	16.64	269.49	6.17	14.21	17.79	1.25
2023-24	19.6	295.36	6.64	9.6	17.82	1.86
2024-25	22.80-22.90@	324.11#	7.03-7.06*	9.7#	16.32-16.83*	1.68-1.73*

Sources: Income Tax Department, MoSPI, Research Agencies  
@Likely, #First Advance Estimates, \*based on likely tax figures and FAE

the use of technology have aided the exercise. At the same time, the rise in incomes has also facilitated higher tax payments by individuals.

Notwithstanding the pressure on companies' profitability, advance tax payments by corporations recorded over 16 per cent growth. "The hope is that the government's continued efforts to simplify tax rules, enhance tax compliance and widen the tax base will contribute to higher tax collections," said Gouri Puri, Partner, Shardul Amarchand Mangaldas & Co.

With the rise in collections, the cost of collection is on a downward trend. It dipped to 0.44 per cent in FY24 from 0.76 per cent in FY21. "This could be attributed to a notable increase in the efficiency of the tax administration, the formalisation of the economy, and the

deployment of technological tools for securing tax compliance," he said.

### TAX BUOYANCY

As the Statistics Ministry has revised the nominal growth downward in the first advance estimate to ₹324.11 lakh crore from ₹326.36 lakh crore in the Budget, tax buoyancy is likely to be affected even with higher collections.

According to an IMF working paper by Paolo Dudine and Joao Tovar Jalles, tax buoyancy is a measure of the responsiveness of tax revenues to growth in nominal GDP and discretionary changes in tax policies. It is the ratio of the percentage change in gross tax revenue to the percentage change in GDP over the previous year.

Based on the possible collections, tax buoyancy could be in the range of 1.68-1.73 in FY25 against 1.86 in FY24.

# Economic slowdown: Bank loans to housing, vehicle segments fall sharply

**Piyush Shukla**  
Mumbai

Banks are registering a steep fall in credit deployment to critical segments, such as housing and vehicles, amid a slowdown in economic growth, experts say.

According to data compiled by *businessline*, banks' housing loans (including priority sector housing loans or PSL) — grew by 12 per cent year-on-year to ₹29.08 lakh crore as on November 29, sharply lower than the 37 per cent on-year growth seen last year. A similar trend continued between July and November.

PSL housing loans, meanwhile, grew at a tepid 2 per cent pace y-o-y to ₹7.52 lakh crore as on November 29

versus 20 per cent growth registered last year.

Vehicle loans, too, have seen growth rates fall to 10-16 per cent between July and November from 21 per cent last year, data from the Reserve Bank of India showed.

### KEY FACTORS

According to Karan Gupta, Head and Director of financial institutions at India Ratings & Research, the current trends are nothing but a reflection of the slowdown in the economy and the RBI's hike in risk weight on unsecured credit segments.

"The GDP forecast for the full year has been trimmed by the RBI and our in-house team as well. We had estimated 7.5 per cent GDP growth in FY25 and it currently stands at 6.4 per cent. If you

### GROWTH PANGS

- Home loan growth fell sharply to 12-13% in July-Nov from 37%
- Vehicle loans growth rate declined to 10-16% from 21%

look at overall growth in retail loans, it used to be in the 18-20 per cent range for many years but it has come down sharply to 12-13 per cent," he said.

### FILTERS TIGHTENED

Lenders have tightened their lending filters, Gupta said, and if the desired level of wage growth is not occurring on the ground, consumers will evaluate their purchases

and ascertain if they can serve liabilities. Ind-Ra now expects credit growth of 13-13.5 per cent for FY25 and FY26 but the mix is likely to change with a continued slowdown in lending to shadow lenders and the retail sector. This is likely to be offset by a revival in private capex, benefiting the growth of the corporate segment.

According to the chief of a private bank, lenders are chasing loans with higher returns as the yield on premium home loans is lower.

Separately, though there is a security attached while extending affordable home loans, enforcing the security in case of default does not lead to desired returns due to the lower ticket size of the collateral.

# Brands dip themselves in Mahakumbh fervour

From eye-catching installations to changing rooms, they seek to woo devotees

**Meenakshi Verma Ambwani**  
**Chitra Narayanan**  
New Delhi

All roads lead to the Mahakumbh Mela that begins on January 13. Brands, too, have scrambled on to the Mela highway with smart activations and innovative engagements. Dabur, Parle, Coca-Cola, Reliance Consumer Products, ITC Mangaldeep and Aditya Birla Sun Life AMC are some of the companies out to woo the crores of devotees expected at the holy fair.

"We are seeing 3X to 4X times more brands than in the regular Kumbh," says Rajesh Radhakrishnan, Co-founder and Chief Marketing Officer of Vritti Mindwave Media that has got the rights for the LED display ad spaces at the mela. Over 250 brands have booked space already. BFSI and fintech brands have shown surprising interest, he says.



**GEARING UP.** The scene at Triveni Sangam in Prayagraj on Sunday. **SANDEEP SAXENA**

A Balasubramanian, Managing Director, Aditya Birla Sun Life Asset Management Company, says the fund house has launched a special ad campaign as the footfalls will be very high during the Kumbh Mela.

Dabur India's CEO Mohit Malhotra says, "Most of our key power brands like Dabur Chyawanprash, Dabur Honey, Dabur Red Paste, Dabur Amla Hair Oil, Vatika, Hajmola and Honitus will be undertaking consumer activations at the Kumbh Mela."

From 'Dant Snan Zones' (oral hygiene zones) sponsored by Dabur Red to

changing rooms for women devotees set up by Dabur Amla and Vatika, the company will be omnipresent at the event.

"We will also set up special hair dryers and pampering zones inside these changing rooms, besides offering pilgrims immunity shots to protect them from illnesses. Special baby care rooms are being set up by Dabur Lal Tail," says Malhotra.

ITC Mangaldeep is setting up unique 5 ft tall agarbatti installations at high traffic locations, including Sangam Ghat. Coca-Cola India is also promising immersive experiences. Says

Greishma Singh, Vice-President Marketing, Coca-Cola India and South West Asia, "We are committed to creating social impact through multiple initiatives at the event that showcase the potential of repurposed packaging and raise awareness about recycling to inspire collective action."

Meanwhile, Reliance Consumer Products is setting up Campa Ashram, a space that offers a safe and serene haven for pilgrims to rest. RCPL will also operate *Aaram Sthals* (resting areas) and is installing signage and directional boards to assist pilgrims.

### SUPPLY CHAIN

Mayank Shah, V-P, Parle Products, says the brand is ramping up production and beefing up its supply chain to ensure an adequate supply of products at the biggest fair on earth.

With inputs from Suresh P Iyengar

The banker to every **indian**

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QUICKLY.

Jaishankar to attend  
Trump's swearing-in

**New Delhi:** External Affairs Minister S Jaishankar will represent the Indian government at the swearing-in ceremony of President-elect Donald J Trump on January 20 on the invitation of the Trump-Vance Inaugural Committee, the Ministry of External Affairs (MEA) said. Foreign Ministers from Quad partner countries, Japan and Australia, also confirmed that they had been invited and would attend the ceremony. OUR BUREAU

Adani plans ₹65,000 cr  
Chhattisgarh investment

**Raipur:** Industrialist Gautam Adani on Sunday called on Chhattisgarh Chief Minister Vishnu Deo Sai at his residence and announced an investment of ₹65,000 crore in the Adani Group's energy and cement projects in the State, officials said. During the meeting, Adani announced a planned investment of ₹60,000 crore to expand the group's power plants in Raipur, Korba and Raigarh. PTI

TODAY'S PICK.

Marico (₹672.85): BUY

**Gurumurthy K**  
bl, research bureau

The short-term outlook is bullish for Marico. The price action on the weekly chart indicates that the stock has been getting strong support in the ₹630-₹620 region. Cluster of supports are there in the ₹650-₹630 region. So any fall below ₹650 is likely to be limited as fresh buyers can emerge and take the share price higher. Moving average cross overs on the daily chart also strengthen the bullish case. The chances are looking high for the Marico share price to rise towards ₹700-₹710 in the coming weeks. Traders can go long now at ₹673. Accumulate

Retail inflation may ease to 5%  
in Dec on lower veggie prices

**RATE SLOWS DOWN.** Price drop in 14 seasonal vegetables seen in the range of 1-71%

**Shishir Sinha**  
New Delhi

Retail inflation based on the Consumer Price Index (CPI) is likely to have moderated in the range of 5.1 per cent to 5.3 per cent in December. The Statistics Ministry will release the numbers on Monday. Retail inflation was at 5.5 per cent in November.

A major factor in the possible moderation could be the lower price of vegetables. A *businessline* analysis of 14 seasonal vegetable prices at *mandis* showed that all-India daily average prices had dropped 1-71 per cent on January 3 from year-ago levels in the case of radish, coriander, cauliflower, brinjal, pumpkin, tomato, bottle gourd, okra, carrot and cabbage. Even though retail prices are higher on a year-on-year basis, the rate of rise is lower than in November. While vegetables have a weight of 7.46 per cent, food and beverages have over



**ALL EYES ON RBI.** Amid inflation and tepid consumption, the MPC is expected to revise rates in February PTI

54.18 per cent weight in CPI. A Barclays report, authored by Aastha Gudwani, India Chief Economist, said vegetable price correction is now underway. Tomato, onion and potato prices are down 47 per cent, 26 per cent and 11 per cent from their recent peaks. In December, retail vegetable prices fell 7.4 per cent on a month-on-month basis.

**‘TOP’ FACTORS** “We see December CPI inflation at 5.23 per cent, down from 5.48 per cent,” the report said while estimating

that 15bp (basis points) of the 25bp drop in inflation comes from food, with food inflation likely to moderate to 7.9 per cent. It was 8.2 per cent in November. The report also predicted sequential drops in the prices of foodgrains, meat, fish and fruits, leading to a 1 per cent decline in food prices. Paras Jasrai, Senior Analyst at India Ratings & Research, said that while potato prices had gone up, that of onion had declined and a lower rise was seen in tomato prices. “This will help retail inflation move down to

the 5-per-cent mark in December 2024,” he said. However, Anil Sood, Founder of the Institute for Advanced Studies in Complex Choices, said that the monthly average vegetable price inflation of 26.9 per cent in 2024 was the highest in a decade. It is likely that vegetable price inflation in December and January are higher than earlier, resulting in a higher headline inflation. Even the headline number in December is lower than that in November but if it is more than 5 per cent — this would be four successive months of higher inflation than the median rate (4 per cent) of the targeted range (2-6 per cent). The Monetary Policy Committee (MPC), scheduled to meet next month for the first time under the chairmanship of RBI Governor Sanjay Malhotra, is expected to lower the repo rate after May 2020 and revise after February 8, 2023. There is also concern around tepid consumption.

Marketing support fund to boost exports on the cards

**Amiti Sen**  
New Delhi

Budget 2025 may provide some succour to the country's exporters if a proposed marketing support fund with an estimated annual corpus of about ₹1,000 crore finds favour with the Finance Ministry. The idea is to help promote exports to promising markets, including the US, where a potential tariff penalisation of China by the Trump administration could open up more opportunities, sources said. “The Commerce Department is holding discussions with the Finance Ministry on the possibility of making

provisions for a marketing support fund for exports in the forthcoming budget. The outlay could be around ₹1,000 crore annually but it is still being negotiated. This would push exports of key products in important markets,” a source tracking the matter told *businessline*. The proposed marketing support fund could be used by beneficiary exporters not only for participating in exhibitions, fairs and roadshows in foreign markets but also in meeting various regulatory requirements for products such as pharmaceuticals, the source said. **\$1 TRILLION TARGET** Special focus would be on the US because of the increased



possibilities there as US President-elect Donald Trump has warned of stiff tariffs on Chinese goods, the source added. “The Commerce Department believes that if the country has to go for massive growth in exports, keeping the \$1 trillion goods exports target by 2030 in mind, then marketing is the key and a dedicated fund could help,”

Ahead of MPC meet in Feb, top bankers  
to hold discussions with RBI Governor

**Our Bureau**  
Mumbai



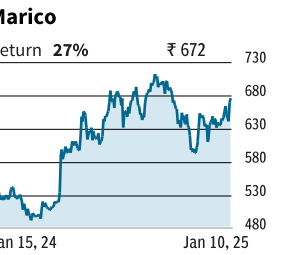
RBI Governor Sanjay Malhotra

Top bankers will be meeting the Reserve Bank of India (RBI) brass, including new Governor Sanjay Malhotra, on January 16, in the run up to the current financial year's last monetary policy committee (MPC) meeting. The meeting assumes significance as it will be held in the backdrop of moderation in credit growth, inflation staying above the MPC's 4 per cent target, tightness in liquidity in the banking system and a depreciating currency. The meeting is expected to be attended by public sector bank chiefs, including the SBI Chairman, and select large private sector bank chiefs. The MPC will be meeting from February 5 to 7. This will be Malhotra's first meeting as Chairman of the MPC. With real GDP growth moderating to a seven-quarter low of 5.4 per cent in Q2 FY25 against 8.1 per cent in the year ago quarter and 6.7 per cent in Q1 FY25, there is a growing demand,

scheduled banks slowed to 11.06 per cent as on December 27, 2024, against 19.61 per cent as on December 29, 2023. The Central bank lowered the cash reserve ratio from 4.5 per cent to 4 per cent in its policy meeting in December 2024. This should help boost credit growth, which has slowed a little too much and quickly in FY25. The MPC maintained status quo on the repo rate, last revised from 6.25 per cent to 6.5 per cent on February 8, 2023, in the wake of retail inflation staying above its 4 per cent target. In his foreword to the latest Financial Stability Report, Malhotra observed that stress test results revealed that capital levels of the banking system as well as of the NBFCs sector will remain well above the regulatory minimum even under adverse stress scenarios. He emphasised that notwithstanding the uncertainties shrouding the global macrofinancial ethos as it unfolds, prospects for the economy are expected to improve after the slowdown in the pace of economic activity in the first half of 2024-25.

including from the government, for a repo rate cut. The Department of Economic Affairs, in its monthly review, observed that the possibility of structural factors contributing to the slowdown in H1 could not be ruled out.

**DEMAND SLOWDOWN** “The combination of monetary policy stance and macroprudential measures (on November 16, 2023, RBI increased the risk weights on unsecured consumer credit exposures of banks and NBFCs, including credit card receivables as well as bank lending to NBFCs, other than housing finance companies) by the central bank may have contributed to the demand slowdown,” per the review. Credit growth of all



on dips at ₹655. Keep the stop-loss at ₹640. Trail the stop-loss up to ₹678 when the price goes up to ₹688. Move the stop-loss further up to ₹690 when the price touches ₹698. Exit the long positions at ₹710. Note: The recommendations are based on technical analysis. There is risk of loss in trading

CII's 10-point Budget wishlist pushes for ease of doing business

**KR Srivats**  
New Delhi

Ahead of the Budget, the Confederation of Indian Industry (CII) has proposed a comprehensive 10-point agenda to further improve the ease of doing business (EoDB) in India, emphasising the need for transparency, speed and reduced compliance burdens. Central to its recommendations is the mandatory use of the National Single Window System (NSWS) for all regulatory approvals at Central, State and local levels, which would ensure greater efficiency and predictability in the approval process. CII Director General Chandrajit Banerjee highlighted the significance of sustained efforts in EoDB reforms. “Simplifying regulat-

ory frameworks, reducing compliance burdens and enhancing transparency should continue to remain our focus agenda for the next several years. Compliances for industry related to various areas such as land, labour, dispute resolution, paying taxes and environment offer a vast scope for reduction, vital for boosting competitiveness, driving economic growth and employment generation,” he added. The proposed 10-point agenda includes: **Mandatory use of NSWS for approvals:** CII recommends integrating all Central Ministries into the NSWS within six months, with the States to follow in a phased manner. A dedicated Central Budget should incentivise the States to adopt the system. **Time-bound services with statutory backing:** A



Chandrajit Banerjee, Director General, CII

new Act should impose statutory obligations on public authorities to process industry applications and grievances within set timelines. Provisions for “deemed approvals” beyond deadlines are also suggested. **Strengthening dispute resolution:** CII recommends expanding commercial courts and increasing reliance on Alternative Dispute Resolution (ADR) methods

like mediation and arbitration. The establishment of the Mediation Council of India and the Arbitration Council of India should be prioritised. **Expanding National Judicial Data Grid (NJDG):** The NJDG's scope should include tribunal cases to manage and reduce pendency as tribunals constitute a significant share of unresolved cases. **Unified environmental compliance framework:** A single framework should consolidate environmental compliance requirements. Existing laws like the Water Act and Air Act should be incorporated into the Environmental Protection Act to centralise regulations. Performance-based rewards for companies exceeding environmental standards. **Facilitating land access:** The States should develop

an Online Integrated Land Authority to streamline land records, digitise land banks and provide dispute information. The India Industrial Land Bank (IILB) should evolve into a National Level Land Bank with Central budgetary support. **Simplified labour compliances:** The implementation of the four labour codes is essential to ease compliance. Additionally, the Shram Suvidha Portal should become a centralised platform for all labour law compliances. **Improving trade facilitation:** The Authorised Economic Operator (AEO) programme should have benefits like extended duty payment periods, self-declared renewals and easier access for MSMEs. **Aligning metrology rules with global standards:** CII suggests synchron-

ising allied legal metrology rules with international standards. Imported equipment certified by OIML labs should be exempt from additional approval processes. **Addressing tax dispute pendency:** CII urges the government to reduce income tax litigation by unclogging cases at the Commissioner of Income Tax (Appeals) level and improving ADR mechanisms like Advance Pricing Agreements and Dispute Resolution Schemes. The agenda reflects the CII's commitment to driving reforms that create a predictable, transparent and business-friendly environment. By implementing these recommendations, India can strengthen its position as a global investment destination while boosting domestic economic activity, economy watchers said.

SEBI's Ananth Narayan  
bats for better risk  
measures in derivatives

**Ashley Coutinho**  
Mumbai

Even though the market regulator does not intend to introduce more measures to restrict activity in derivatives, there is a need to measure risks better, a senior official said on Saturday. “Derivatives are good for the market ecosystem as they aid in price discovery and create depth in the market,” SEBI's Whole-Time Member Ananth Narayan said at an event organised by NISM. “Most of the recent actions taken by the regulator on the F&O side was aimed at curbing activity in index options on expiry day. We are not in any hurry to follow up with any additional steps.” He added that SEBI is not envisaging any steps on “suitability and appropriability” to determine who can trade in the derivatives market.

**STRIKE A BALANCE** “We are trying to measure risk better in the derivatives segment. Having a lopsided market where the volumes in one segment (derivatives) dominates the other (cash market) could lead to conditions that lead to manipulation and unnecessary volatility,” he said.

The regulator is also considering linking the market wide position limit to the average daily delivery volumes in the cash market on a dynamic basis. Currently, the market wide position limit is 20 per cent of the free float. “What we find in stock futures and options is that the actual risk being run in a particular stock is several times the daily average volume in the underlying stock,” Narayan said. “When you have indices trading in F&O, should there be restrictions on how much weightage the top stocks should have? This is matter of discussion.” According to Narayan, the way the exposure of mutual funds and AIFs in derivatives is measured is incorrect and could be made more realistic so that there is better understanding of what the risks in the system are.

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‘The ball is in private sector’s court for creating larger deep tech funds’

bl.interview

**Sanjana B**  
Bengaluru

Infosys Co-founder S Gopalakrishnan, also the President of Infosys Science Foundation, highlighted the importance of enhancing STEM education in India and the need for increased deep tech and research funding to drive innovation and growth. *Edited excerpts:* **Is there scope for improvement in STEM education?** There is always scope for improvement. We don't feature in the top 100 universities in the world. There have been some improvements in rankings, and it is an ongoing process. Having said that, the output of our institutions is appreciated worldwide today. They run some of the largest corporations. 20 to 30

per cent of the faculty around the world are of Indian origin. The world is coming to India for IT and R&D. We have around 1,800 global capability centres, with most doing high-end work and research. From a talent perspective, especially considering the top 10 per cent, our students are as good as anybody. But we have to improve on the research side, especially translational research, which is taking that research to products and technology. There are three segments to consider — research, translational research, and entrepreneurial activity. In research, we are making some improvements. I see better-quality papers coming and better-quality start-ups on the entrepreneurial side. We are seeing deep tech start-ups coming. Challenges regarding products and technologies with global impact remain. We need to do more work on transla-

Now, I'm seeing more philanthropies coming forward to support research **S GOPALAKRISHNAN** Infosys Co-founder and President of Infosys Science Foundation



tional research, which is taking the ideas from the lab to market. There is a funding issue and an issue of motivation because our education system only rewards those publishing papers. Infosys Prize has played a role in raising the quality of research and showcasing world-class research in India. **What is the issue with funding when it comes to research?** We need more from philanthropy. Some of the largest philanthropies in India sup-

port healthcare and education, which is much-needed because they are serving immediate needs. Research, however, is a long-term benefit. Now, I'm seeing more philanthropies coming forward to support research. Second, we need to get industry to support research, especially translational research. Industry must collaborate more with academic institutions. We want academia to reach out to the industry and vice versa. I'm hoping in the next 10 years, we will see increased investment by the industry

in research within and outside the company in academia and research institutions. Currently, India's spend on research and development is 0.7 per cent of its GDP. I have been saying that this should go up to 3 per cent — a five-fold increase. We have created the third largest start-up ecosystem in the world and are attracting \$10 billion-plus funding every year into our start-up ecosystem. In the last 10 years, a major success is the 100+ unicorns that we have. We need to now incubate deep tech start-ups and this is where incubators in places like IISc help but we need to address the challenge of deep tech start-ups having a longer cycle time, thereby requiring patient risk capital. **Not a lot of ground-breaking innovations like AI/Gen AI are rooted in the country. When might this change?**

It's not a problem of talent, which is a good thing, but an issue with the money and risk funding available for R&D. We don't have a billion-dollar VC fund in India. Open AI raised \$6.6 billion recently but how many funds in India can put in that kind of money? There is an effort to look at solutions like increasing the funding for research, translational research and deep tech start-ups. We don't have enough deep tech VC funds, at least not to the size of what the US has. In India, we should see a mix of the public sector, government and private sector creating these funds. I believe the ball is in the private sector's court. That's where we need to see larger funds being created and larger initiatives in deep tech, a segment which typically has a long gestation time. You need the ability and the stamina to run a marathon but also the money.

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Farm the climate

Agriculture needs to adapt better to climate change

The Indian farming ecosystem has seen a big change in recent years — the acceptance of climate change as an imminent concern, rather than an issue that needs to tackled in the medium term. Policymakers, bankers, researchers, weather experts and seed companies are of the view that cropping techniques, patterns and technologies must adapt rapidly.



At the recently concluded *businessline* Agri and Commodity summit, it was agreed that ‘natural farming’ can insulate India’s crops against increasingly frequent extreme weather events. If the Indian Council for Agricultural Research is working on drought and flood resistant varieties, Nabard is promoting new financial mechanisms such as the Agri Fund and the Carbon Fund, working in tandem with States and multilateral agencies. In terms of the delivery of climate-proofing solutions, primary agricultural credit societies have been identified as important nodal institutions. The Centre plans to expand their role beyond giving credit. However, the drive to set up two lakh multi-purpose cooperatives would require the cooperation of the States. There is growing recognition of the potential of earning carbon credits through climate-smart practices, although the processes need to be firmed up, so that genuine farmers rather than dubious ‘consultants’ and ‘experts’ with global links benefit. Funding for such practices must be accompanied by clearcut conditions, so that back-end inputs too are ‘green’.

However, there are gaps in the current thrust. India’s farm research systems are primarily geared towards increasing yields through resource-intensive hybrid varieties. It is not clear whether varieties that combine stress resistance and yield improvement are in the pipeline. More efforts should be made to select natural varieties for their resilient traits. A research focus on yields alone may prove limiting in the long run as the prospect of crop damage assumes more serious proportions. The Prime Minister’s Office has called for reforms in the ICAR system. While foodgrain output has increased despite vagaries of the weather, it is better to be prepared for eventualities.

It is also important to realise that the impact of harsh weather on crops is pronounced in the rainfed heartland, which constitutes 50 per cent of the cultivated area, as against irrigated regions. Climate proofing policies should focus on the unirrigated regions in particular. Multi-cropping as well as promotion of millets on typically small patches of land can protect output and incomes. Research has shown that monocropping in rainfed regions has reduced returns to farmers, while exposing them to uncertainty. There needs to be more conceptual clarity on the entire gamut of processes that encompass sustainable farming. The allocation towards the PM Paramparagat Krishi Vikas Yojana, which has seen just over ₹2,000 crore being spent over about four years, can be increased alongside reforms in research and market linkages.

POCKET

RAVIKANTH



PRAGYA PRATISHTHA

In February 2024, the global materials science community was stunned by a groundbreaking achievement when the US-China research team successfully synthesised a functional semiconductor from graphene. This milestone promises to revolutionise industries such as electronics, energy storage, and medical devices, with applications that could reshape computing and numerous other technological sectors.

With its remarkable properties — strength, conductivity, and flexibility — graphene has emerged as a game-changer worldwide, offering immense possibilities for innovation. China has strategically positioned itself as a global leader in the graphene market, investing heavily in research, infrastructure, and production. By 2023, China controlled over 70 per cent of global graphene production, contributing significantly to the sector’s rapid growth. As projections show the market reaching \$6.25 billion by 2031, China’s leadership is evident through its comprehensive national policies, such as ‘Made in China 2025’, which have fuelled significant advancements in graphene technology.

However, China’s dominance also underscores the importance of securing access to critical resources like graphite. For countries like India, this represents both a challenge and an opportunity, particularly as demand for graphene is growing in industries like electronics, aerospace, and energy.

INDIA’S PROGRESS

India is making strides in the field of graphene, with a growing number of institutions and companies tapping into its potential. At the Centre for Nano Science and Engineering at IISc Bangalore, researchers have developed a chemical vapour deposition system that produces various 2D materials, including graphene. Tata Steel has also taken significant steps by growing graphene from steel surfaces and exploring its potential for plastic recycling.

Additionally, IIT Roorkee-incubated Log 9 has patented graphene-based ultracapacitors, demonstrating its promise in energy storage applications. Other innovative companies like Tirupati Graphite and Nanomatrix



India can make a mark in global graphene market

**KEY STEPS.** Dedicated industrial parks, boosting R&D funding and fostering international collaborations will add to the momentum

Materials are driving growth in graphene production and antiviral applications. Digital University Kerala, in partnership with Tata Steel and C-MET, has established the India Innovation Centre for Graphene, further contributing to research and innovation in this field.

These efforts highlight India’s growing presence in sectors such as automotive, electronics, construction, and defence, despite ongoing challenges like limited R&D funding and fragmented infrastructure.

GROWTH POTENTIAL

The Indian graphene market is thriving and is expected to grow at a compound annual growth rate (CAGR) of 20.1 per cent between 2017 and 2027. This growth is driven by the expanding demand for graphene across various industries, particularly electronics, which holds the largest market share. The government’s initiatives, such as Make in India and Production Linked Incentives, have helped boost the electronics sector, creating a solid foundation for graphene’s application.

India is making strides in the field of graphene, with a growing number of institutions and companies tapping into its potential

However, while progress has been notable, patent filings related to graphene in India are still limited, with the majority of applications coming from foreign companies such as Lockheed, BASF, and PPG Industries, along with few domestic institutions like IITM and ARCI.

A significant achievement has been the granting of a patent to PCBL for its innovation in graphene-based rubber compounds, showing India’s potential for innovation in this field (Patent No IN544320).

Despite these advancements, India’s production remains a fraction of global leaders like China and Brazil. Market fragmentation, lack of industrial scalability, and skilled workforce are challenges India must overcome if it is to compete effectively on the global stage. Moreover, the high cost-to-volume ratio of producing high-grade graphene poses a formidable challenge, potentially leading to concentration of production in a few global hubs, similar to the semiconductor industry.

THE PATH AHEAD

India is on the cusp of an exciting opportunity in the global graphene market, but to fully capitalise on its momentum, a strategic approach is needed. Establishing dedicated graphene industrial parks, boosting R&D funding, and fostering international collaborations with

leading graphene innovators are key steps. A potential collaboration with the National Graphene Institute at the University of Manchester could further accelerate India’s research capabilities. Additionally, forming national forums and a National Graphene Industry Alliance could also be instrumental in advocating for industry needs and providing incentives for industries to adopt graphene-based solutions.

Workshops and educational initiatives aimed at raising awareness about the unique benefits of graphene will play a pivotal role in spurring demand.

These initiatives will not only increase the production capacity of the industry but also create a sustainable, growth-oriented ecosystem around graphene. India’s advancements in graphene research and development demonstrate its growing capabilities. With the right policies, collaborations, and investments, India has the potential to emerge as a strong player in the global graphene market, contributing to technological innovation and economic growth.

The future is bright, and India’s proactive involvement in this emerging field will be crucial to shaping the next wave of technological evolution.

The writer is Assistant Director, Centre for Contemporary China Studies, Ministry of External Affairs. Views are personal

We must embrace frontier technologies quickly

They are catalysts for transformation, promising solutions to pressing challenges on a scale and speed hitherto unimaginable

Debjani Ghosh

India is at a tipping point. Our ambition to become a developed nation by 2047 calls for transformative, all-encompassing change. Incremental progress will no longer suffice in a world evolving at breakneck speed. Achieving this goal demands exponential transformation across every sector of our society and economy.

In any other era, this ambition might have been dismissed as unattainable. But today, we find ourselves at the threshold of a technological revolution powered by frontier technologies — an era where innovation is breaking barriers and redefining the limits of what is possible.

Frontier technologies exist at the dynamic intersection of science and technology, driving transformative impacts across sectors in ways previously unimaginable. Consider the example of the 2024 Nobel Prize in Chemistry. Awarded for advancements powered by artificial intelligence (AI), it underscores how AI breakthroughs are reshaping the landscape of innovation. The Nobel was given to the founders of AlphaFold, an AI tool that solved the structure of over 200 million proteins in a single year — a feat that would have taken humanity billions of years using traditional methods.

This groundbreaking achievement is fast-tracking drug discovery for diseases

like cancer and Alzheimer’s, moving us closer to affordable, personalised medicine.

Imagine the impact of deploying such technologies across India’s vast healthcare ecosystem — transforming diagnostics, improving outcomes, and making quality care accessible to every citizen, even in the most remote areas.

CHALLENGES IN AGRICULTURE

In agriculture, India faces twin pressures of population growth and climate change, which demand urgent innovation. Enter technics like boosted breeding, a revolutionary bioengineering technique that enables plants to inherit 100 per cent of their parents’ genetic material — without any DNA editing. This innovation boosts crop yields and creates climate-resilient varieties, addressing food security challenges head-on.

Scaling such technologies could position India as the food basket to the world, achieving self-sufficiency while leading the charge in sustainable agriculture. India’s renewable energy ambitions are equally bold. Frontier technologies are redefining the energy landscape, with the integration of solar, wind, and green hydrogen leading the charge. Green hydrogen, for example, is already decarbonising industries such as steel and shipping while providing a robust energy storage solution.

As India accelerates production, it stands on the cusp of becoming a global hub for renewable energy innovation,



**INNOVATION.** Getting a boost from AI

driving both economic growth and environmental resilience.

These technologies promise solutions to humanity’s most pressing challenges — climate change, food shortages, and equitable healthcare delivery.

However, the rise of these technologies brings with it profound ethical and regulatory challenges. From potential misuse to the disruption of existing systems, the risks are real and must not be ignored.

To harness the full potential of frontier technologies, India must act decisively and early. By spotting these trends early, understanding their implications, and proactively shaping their development, we can ensure these technologies work for us—not against us. Early adoption of frontier technologies allows us to:

**Shape standards and markets:** Leading in technology means setting global standards, which ensures Indian

interests are prioritised.

**Maximise economic impact:** Frontier tech could contribute trillions to global GDP. If we act now, we can capture a significant share of this value.

**Address risks proactively:** Technologies like AI and quantum computing carry risks — from job displacement to national security threats. Acting early allows us to build robust frameworks that mitigate these risks. We must lead with a framework that is safe, inclusive, and responsible — one that balances opportunity with caution. And that’s the main agenda of the NITI’s Frontier Tech hub.

Our goal is to partner with experts across industry, academia and government to accelerate India’s readiness for innovation and adoption of frontier technologies.

The road to 2047 begins today. By 2035, the midpoint in our journey, we must have a clear vision for how frontier technologies will shape critical sectors. This requires:

**Investing in R&D:** India’s current R&D spend is just 0.7 per cent of GDP — far below global benchmarks.

**Building partnerships:** Collaborating with industry, academia, and global leaders to foster a thriving innovation ecosystem.

**Creating ethical frameworks:** Establishing policies that ensure technologies are used responsibly and inclusively.

The writer is Distinguished Fellow, NITI Aayog

BELOW THE LINE



The politics of promises

As the Delhi assembly elections draw near, political parties are showering voters with grand promises. The Congress party has unveiled its ₹8,500 monthly ‘Yuva Udaan Yojana’ for unemployed youth, appealing to a crucial demographic. Meanwhile, AAP and BJP have their own mix of schemes, focused on women’s

welfare and job creation. With freebies taking centrestage, the question remains: Are these sustainable solutions or just pre-poll carrots? Delhi’s voters must weigh handouts against long-term governance. Will promises win over performance? Only time — and the ballot box — will tell.

The battle of bungalows

The war of words between AAP and BJP just got an opulent twist! After being evicted from the infamous SheeshMahal — dubbed so for its alleged extravagant makeover — Delhi CM Atishi hit back, accusing the BJP of vendetta politics. While BJP leaders call it a PR stunt, AAP’s Sanjay Singh threw down the

gauntlet, inviting everyone to tour the CM’s bungalow to debunk “golden toilet” myths. He didn’t stop there, he wants the doors of RajMahal (official residence of the PM) to be open for public scrutiny. The gloves are off, and the battle of bungalows is heating up. Who wins? Delhiites will decide. Meanwhile, the taxpayer might just sigh, “Not again!”

Workaholic woes

It seems the corporate elite is locked in a bizarre race to outdo each other in redefining “dedication”. Narayana Murthy’s 70-hour work-week suggestion was barely digested when L&T Chairman SN Subrahmanyam decided to up the ante with a

90-hour pitch. His reasoning? “How long can you stare at your wife?” Work hard, sure, but remember: life is not just about making time for work. And sometimes, a little extra “staring” at your loved ones might just be the break you need.

Thrust on ideology

Telangana Chief Minister A Revanth Reddy does not mince words. At the release of former Governor CH Vidhyasagar Rao’s book , *UNIKA*, he said, “Lack of ideology in politics is the main reason for the increasing party defections. Leaders are changing parties for posts. Students who followed the party ideology will be loyal to the political organisation forever. Revival of ideological

student politics is the need of the hour.” “...Government means the combination of the opposition and ruling party with a strength of 119 MLAs...The role of the opposition is to point out the shortcomings in the government. However, we are losing the spirit of democracy,” he said. Communist party and BJP legislators used to give advice and suggestions when the ruling party and opposition locked horns on some issues in the assembly, he said, adding, “My government is displaying democratic spirit. Not a single instance of expelling opposition members from the assembly was reported in the last 13 months.”

Our Bureaus



# Find joy in one’s pursuits

A framework for a balanced, meaningful life

## BOOK REVIEW.

S Adikesavan

Often, when people set out on their career journey, their focus remains firmly outward. Success is measured by promotions, pay raises, and the steps they have climbed on the corporate ladder. Comparisons with peers and benchmarks of external achievement dominate the narrative. However, this relentless drive leaves little room for self-reflection or an understanding of the deeper purpose behind these pursuits. For many professionals, it is only in mid-life — or sometimes even later — that they pause to reflect on their journey, grappling with profound questions about their life, career, and identity.

Deepak Jayaraman, the author of *Play to Potential: Lead a Full Life, Become the Best You*, brings a wealth of experience to these questions. An alumnus of IIT Madras, IIM Ahmedabad, and London Business School, Jayaraman has built an impressive career with stints at KPMG, McKinsey and Egon Zehnder, a global executive search firm.

Yet in 2016, he made a conscious decision to step off the corporate treadmill. This was not an escape but rather a reorientation towards his “genetic USP”: helping others unlock their full potential. Since then, Deepak has worked as a certified CEO coach, offering guidance to corporate leaders in aligning their professional aspirations with their inner values. His efforts go beyond traditional executive coaching. Through his “Play to Potential” podcast, launched in December 2016, he has delved into meaningful conversations with business leaders, management thinkers, Olympians, and artists.

### THE PREMISE

The book focuses primarily on mid-life, a stage when the demands of a professional career often reach their peak. For many individuals at this juncture, goals tend to blur. Success, which once seemed so clearly defined, now feels less satisfying. It is here that Deepak suggests the need for constant introspection and internalisation to craft a personal “playbook” — a unique framework that aligns with one’s character and disposition.

What sets this book apart is its tone. Unlike prescriptive self-help manuals, *Play to Potential* presents a reflective narrative. Deepak



Title: Play to Potential  
Author: Deepak Jayaraman  
Publisher: Penguin

shares real-life experiences and insights, inviting readers to draw their conclusions rather than offering rigid solutions.

The book is divided into nine chapters, but it is from Chapter 6 onwards that a central theme emerges: the alignment of personal and professional lives. Deepak explores this alignment not as a simple work-life balance issue but as a deeper, more holistic integration of one’s values and aspirations. Through anecdotes and case studies, he demonstrates how individuals have managed to harmonise these aspects, making their lives not just productive but fulfilling.

One of the standout features of the book is its pragmatic framework for self-actualisation. Deepak introduces the acronym FLAVOUR, representing six dimensions of a meaningful life: Family context; What you Love; Aspirations; Being of Value by seeking Opportunities; Investing in yourself and Building healthy Relationships

Jayaraman unpacks each dimension with relatable examples. For instance, in discussing “making space for what you love,” he shares his own journey: “While there are many technical explanations to the word ‘play,’ I would suggest a simple filter: Does the activity replenish you, energise you, or stimulate you? Or does it drain you, deflate you, or dull you? ... When I moved from Egon Zehnder to what I do now as a podcaster, I felt I had moved to what I truly love and find energising. To that extent, work feels like play.” This anecdote exemplifies the book’s core message: success is not about climbing ladders but about finding joy and meaning in one’s pursuits.

The reviewer is a keen observer of polity and the economy

# Making it big in America amidst odds

The book traces the lives of ordinary Indians who overcame many challenges to achieve great heights in the US

## BOOK REVIEW.

Sridhar Krishnaswami

More times than not it is difficult to find a context to review an interesting work. Not so is Meenakshi Ahamed’s book, for she has an audience in thousands of Indians who are setting their sights, dreams and passions on America by way of a student visa or a H-1B as well as the Indian-American community already entrenched in every facet of their adopted land.

This is what Ahamed’s work is all about — not just the travails of coming to a foreign land but ensuring the hard path has its rewards in the end. It was not a question of a silver platter waiting on arrival or manna from heaven. The techies, healers and influencers who have been chosen for this carefully woven book will vouch to this.

“It’s amazing. Indian descent Americans are taking over the country... you guys are incredible,” President Joe Biden told Swati Mohan, the lead scientist at NASA in 2021. In 1970 when author Ahamed came to America there were about 51,000 Indians and in 2020 there were an estimated 4.4 million, many of whom were naturalised American citizens or born in that country; and over a period of time came to be a powerful voting bloc representing both the Democratic and Republican parties not to speak of being Members in the House of Representatives.

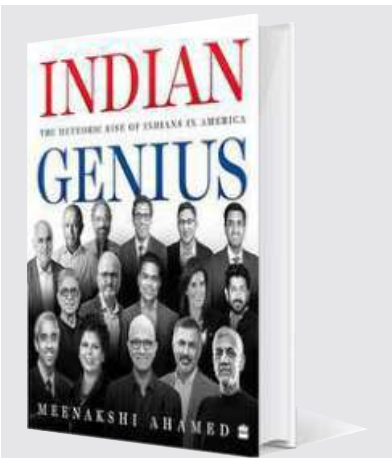
In 2023, Indians surpassed the Chinese as the second largest immigrant group after the Mexicans, and the expectation is that by 2055 Asians will surpass the Hispanics as the largest immigrant group in the US. But the phases were distinct says Ahamed, pointing to the first wave that came to

America in the 1960s; the second being a part of the “tech-stem” boom and the New Generation of folks either born in America or the ones who came at a very young age. But the individuals selected in each category had their own insights into a path of success, not necessarily smooth but with obstacles and hence a peek into their sources of strength.

### CONSERVATIVE CULTURE

*Indian Genius* paints a remarkable picture of individuals who had to fight through the conservative Indian culture. Chandrika Krishnamuthy — later Tandon — speaks of the expectations of a girl child, the reluctance of elders to see her going to a co-educational institution like Madras Christian College. “I faced two problems. It (meaning MCC) was co-ed and an hour away. I had to go on hunger strike to overcome the families’ objections. My mother used to say that when you put fire and cotton together it’s combustible... It was all about preserving family honour”. But Chandrika had her way and in the process made it easier for her sister Indra (Nooyi) to enter the same institution. The strict culture did not stop with college... it included hanging around with friends who were boys!

Challenges were not merely with colleges or friends or confined to the (then) Madras Sisters. Each path to America was difficult as it was challenging; the Reserve Bank of India for a very long time would wave no more than eight dollars as Exit allowance... Imagine landing in New York or anywhere with just eight bucks to show for. No small thanks to relatives or even clever airlines who, as Ahamed reveals, would overcharge the fare and return the balance in dollars to the needy student on arrival in America! Kanwal Rekhi, seen as the Godfather of then Inventors and Founders, grew up in a



Title: Indian Genius: The Meteoric Rise of Indians in America  
Author: Meenakshi Ahamed  
Publisher: HarperCollins India, 2024  
Price: ₹567

### MEET THE AUTHOR

Meenakshi Ahamed is a freelance journalist and the author of ‘A Matter of Trust: India-US Relations from Truman to Trump’

“crowded home without a running toilet”; an alumnus of IIT without money, he had to settle for Michigan Tech but made his way to Silicon Valley in 1971.

Rekhi, an inventor and an entrepreneur, also had to face problems over his inter-racial marriage as his wife was white.

But the likes of him and those of Suhas Patil, Sanjay Mehrotra and Vinod Dham were seen as the stars of the first generation of Indian engineers. Vinod

Khosla, the billionaire venture capitalist and the company men consisting of Shantanu Narayen, Satya Nadella or Nikesh Arora made a huge impact and not just in the Silicon Valley. All of them are said to have possessed “Jugaad” or ingenuity.

### LOOKING PAST CHALLENGES

Ahamed traces the varied roots of the medicine men like Deepak Chopra, Abraham Verghese, Siddhartha Mukherjee, Atul Gawande and Vivek Murthy. And the story of the influencers be it Fareed Zakaria, Neal Katyal, Ro Khanna and Nikki Haley is quite impressive indeed given their varied backgrounds but bound by the chord of a determination to look past challenges and succeed in a nation of opportunities. Khanna, for instance, is already setting his sights on the Senate from the House of Representatives and Haley is already a presidential candidate from the Grand Old Party and displaying enough guts to stand up to what she believed in.

Ahamed may be faulted by some for being too selective in her group of individuals to portray the meteoric rise of Indians in America. And there will be those who will make the point that only the positives of Indians in their chosen land have been focused on and that there have been some who did not rise up to expectations or let down the community. But the book has to be seen in how even ordinary folk dared to dream of going to America and making it in spite of bigotry and racist sentiments out in full display. The men and women succeeded not because their cultures placed an accent to ignore the negatives; but in a confidence of their futures in America.

The reviewer is a senior journalist having been in Washington DC for 14 years covering North America and the United Nations; and in academics for more than a decade as Professor and Deputy Dean

## NEW READS.

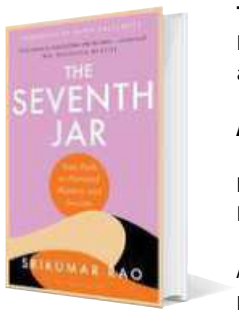


Title: Lead Smart in the AI Era

Authors: Amit Kumar Jain and Surbhi Jain

Publisher: Rupa Publications India

The authors draw on real-world examples to reveal how visionary leadership is essential to foresee rapid changes in the digital ecosystem



Title: The Seventh Jar: Your Path to Personal Mastery and Success

Author: Srikumar Rao

Publisher: Bloomsbury India

A treasury of tried-and-true practices that will help cultivate awareness and replace stress and anxiety with lasting fulfilment, passion and purpose



Title: Building a StoryBrand 2.0: Clarify Your Message So Customers Will Listen

Author: Donald Miller

Publisher: HarperCollins Leadership

The author provides you with one of the most powerful and cutting-edge tools to help with your brand messaging efficacy and output

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## TWENTY YEARS AGO TODAY.

January 13, 2005

### Reddy moots capping FII inflows

Dr YV Reddy, Governor, RBI, called upon the Government to have an option to impose a ceiling on FII inflows or even taxing them. He observed that the magnitude of FDI/FII flows are tending to be large and volatility and that a view needs to be taken on the quantity and quality of FII flows.

### Restrictive clauses of Press Note 18 go

The Government has done away with the restrictive provisions of Press Note 18 for all future joint ventures with foreign partners. In the new dispensation, new joint ventures and collaborations will be shaped by commercial contractual agreements based on the free will of partners without Government interference.

### New guidelines to facilitate increased FDI through JVs

The Government has come out with a set of fresh guidelines for foreign collaborations. The guidelines stipulate that all new proposals for foreign investment or technical collaborations would henceforth be allowed under the automatic route, subject to sectoral policies regarding limits of equity holdings by the foreign partners and the strategic importance of the sector.

### Short take

# Women’s safety: How sensitive are policemen?

RK Raghavan

The recent report of a sexual attack on a woman student at the Anna University, Chennai, comes as a shock. The offender has no doubt been identified and arrested. The fact that a woman could be assaulted in the heart of the city is a blot on Chennai’s reputation as being safe for women.

Even as this is a single incident, it raises several questions about the efficiency of the police. The record of law and order agencies the world over in such matters is a mixed bag.

The impression among opinion-makers is that there is an air of indifference among police leaders when

it comes to safeguarding women. This accusation is only partially correct. Performance standards vary from State to State. We have a police force (including paramilitary forces) of more than two million.

We have about 17,500 police stations in the country. It is here that the shoe pinches. Instead of being service centres, many of these have proved to be insensitive to public needs.

In any police station, especially in the rural areas, it is appalling to see the way women are treated, even by policewomen. Induction of women into the police started about 50 years ago with fanfare and with a view to ensuring that women victims of crime receive a sympathetic hearing.

The strength of the women’s wing now is approximately 12 per cent of the total police force. More significantly, there are about 750 exclusive women police stations.

One cannot say with certainty that these changes to the structure of police have ushered in greater gender sensitivity. Even now complaints of molestation and rape are reportedly hushed up, especially in rural India. Influential offenders are still able to go scot-free.

### MORE VISIBILITY NEEDED

There are two aspects to the situation. Our cities and towns need extra police visibility in important thoroughfares. This is more easily said than done.

In view of the increasing demands on the law and order wings of the police, women protection tasks are sidelined.

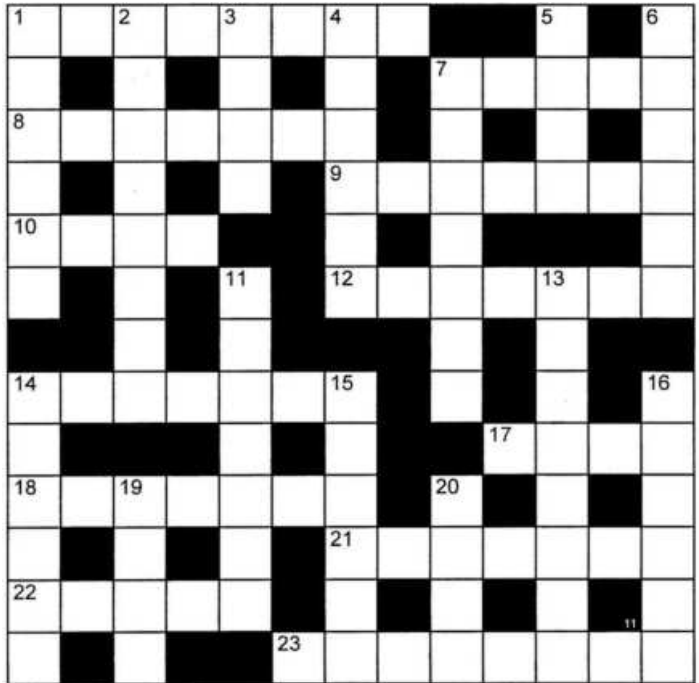
Merely enlarging police force is of no avail unless their use is more imaginative and rational. Throwing in more policemen to protect our ministers and dignitaries is downright unacceptable.

There are undoubtedly chinks in the current arrangements to safeguard women in public spaces.

While the police could be more alert during late hours, women, on their part, should reflect on how to organise their routine so as to escape anti-social elements.

The writer is a former Director of CBI

## BL TWO-WAY CROSSWORD 2609



### EASY

#### ACROSS

- Wanting courage (8)
- Pile of driven snow (5)
- Prove, pronounce guilty (7)
- Refrain from violating (7)
- Of the laity (4)
- Tombstone inscription (7)
- Taste (7)
- One-person performance (4)
- Name one to an office (7)
- Do away with, put an end to (7)
- Compound of oxygen and other element (5)
- Having received no instruction (8)

#### DOWN

- Excite laughter (6)
- Veil over head and to shoulders (8)
- Incursion (4)
- False (6)
- Shoot gun (4)
- Suture (6)
- In spite of (7)
- To furnish (7)
- Permitting (8)
- Liquor-jug (6)
- Keep, hold back (6)
- Tall cylindrical hat (3-3)
- Hurt feeling (4)
- Deep sleep, stupor (4)

### SOLUTION: BL TWO-WAY CROSSWORD 2608

ACROSS 7. Procrastinate 8. Gordian knot 12. Nature 14. Spread 16. Priced 18. Bridle 19. Ghost writer 23. Pressure point

DOWN 1. Frog 2. Scar 3. Satire 4. Stands 5. Anon 6. Stet 9. Ostrich 10. Overdue 11. Idle 12. Nape 13. Roe 15. Par 17. Detour 18. Barter 19. Gore 20. Oast 21. Took 22. Rung



ON THE CAMPAIGN  
TRAIL.

New Year has begun on a surprisingly low-key note, where brand campaigns are concerned. Perhaps brands are reserving their ammunition for the Mahakumbh, where outdoor media agencies are reporting record booking of space.

Friendship and a *filmi* reprisal



Three guys in a convertible, off on a holiday. Reminds you of *Dil Chahta Hai*, perhaps? Or *Zindagi Na Milegi Dobara*? Phone maker Oppo's new ad for its Reno 13 smartphone series is more than a passing ode to the two films. With three upcoming actors — Vedang Raina, Ishaan Khatter and Siddhant Chaturvedi — playing the holidaying trio, the ad made by Famous Innovations captures the fun of friendship, with a trusted phone by the side.

Heart-touching inner beauty



Soap brand Godrej No.1's latest television commercial carries forth the idea of *Dil Se Khoobsurat* (inner beauty). Conceptualised by Lightbox, GCPL's in-house creative studio, the ad shows a few school kids hopping onto a bus. Among them is a visually challenged girl. A woman offers her the window seat, and the girl asks poignantly, "What can I really see from the window?" But as the woman begins describing each scene, the girl tells the woman she is truly beautiful — as she has a beautiful heart.

Wising up to digital frauds



HDFC Bank's latest campaign, 'Yeh Aapke Sath Bhi Ho Sakta Hai', created by FCB Kinnect shows Vigil Aunty (a recurring character who keeps track of digital scams) working to shatter the optimistic belief many have that they're immune to scams. The campaign includes four films that show the tactics fraudsters use to manipulate their victims. One of these shows fraudsters posing as cops and swindling a customer out of his bank savings. The films end with the warning that it could happen to you too. A much-needed cautionary film.

Aspirational Bharat



Protean eGov Technologies Limited, which creates digital public infrastructure (DPI), has unveiled a powerful brand campaign — 'Apni Kahaani ka Hero!' Narrated by Pankaj Tripathi, the film — in three minutes and 50 seconds — takes the viewer through pivotal moments in the life of a common Indian, all enabled through Protean products. Some of the transformative products showcased are Protean Vidyaasaarathi (scholarships), Protean PAN, eKYC, NPS, ONDC and ProteanLife. The film could have ended up being heavy but, thanks to Tripathi's masterful storytelling, it holds your attention.

NUGGETS.

Digital privacy and marketing

The Digital Personal Data Protection (DRDP) rules have been put out by the Indian government for public consultation until February 18, 2025. They can impact the digital and influencer marketing strategies of brands since they call for consent before obtaining personal data and also stress upon deletion of customer data after three years of inactivity. Social media platforms relying on algorithms that use customer data to push content could find themselves hamstrung. For brands that rely on platforms, this is one more push towards attempting direct audience engagement.

Erasing net neutrality

Meanwhile, in the US, a federal appeals court has struck down net neutrality rules. These rules restrict telecom companies from speeding up access to certain websites while slowing down others. Why this is a big deal is that local startups could struggle to get users while big corporations have an advantage.

● TECH-TONIC SHIFT

# CES 2025 shows how AI will own the year

Until last year artificial intelligence was only a promise but the tech event displayed how it will truly transform our lives



**FLIT ABOUT TOWN.** Chinese firm Xpeng Aeroht's flying car created a stir at the 2025 Consumer Electronics Show in Las Vegas

Chitra Narayanan

At the Consumer Electronics Show (CES), the influential tech event in Las Vegas that opens every calendar year and gives us a glimpse of trends to come, there was a flying car, a solar- and AI-powered helmet, an AI-powered radio, a robotic vacuum cleaner with arms, unusual wellness gadgets, and plenty of other exciting stuff. Products and news centred on artificial intelligence (AI) dominated the show but robotic tech enthralled too, as did futuristic mobility. There was much focus on wellness and sustainability, and age-tech made big strides. Nvidia was the company that created the maximum buzz but the Asian tigers Samsung, LG and Panasonic pulled in the crowds too. Interestingly, small brands had some of the most interesting tech. For marketers and brands there was plenty to chew over. Here are some trends we spotted after attending the event virtually. All the highlights are on CES.tech.

**AGENTIC AI**

Till now we had been hearing a lot of noise about AI without really getting a grip on how it would change

our lives. CES 2025 showed how it will change businesses and individuals substantively. Agentic AI is going to be big. Literally, every brand will have an AI agent. And it is quite possible that the AI agent will interact not with a consumer but the consumer's AI agent. Individuals can create their own agents too. Many brands showed off their AI agents, which had a personality. LG, with its promise of 'Affectionate Intelligence', had a lovable agent, Furon. Panasonic introduced us to an AI-powered digital wellness assistant, Umi (with powers of reasoning and ability to converse), that would be a help to caregivers. Delta showcased Delta Concierge.

**GADGETS GET SMARTER**

We already have smart gadgets. But CES 2025 showed us gadgets with an unimaginable level of intelligence. For instance, Samsung's AI-powered fridge knows your consumption pattern and gives shopping recommendations. LG showcased an AI radio that resembles a speaker and can switch programmes to suit your taste and mood. AI was prevalent in every category. From healthcare to cars to aircraft to refrigerators and TVs, to even helmets. A solar-powered helmet offered by Exeger (a Swedish deep-tech

● FRUGAL MARKETING

## Joker & Witch's three Cs strategy to brand building

Chitra Narayanan

In a world filled with heavily funded start-ups that create noise by throwing money, how a small, cash-strapped jewellery and watch brand grew through frugal marketing makes for an interesting study. Joker & Witch, founded by the husband-wife team of Satish Singh and Maya Varma in 2015, has managed to carve out for itself a unique brand identity and persona. So has their second brand, Teejh. Both brands have found gaps in the market and quickly filled them. As for the Joker & Witch brand name, Singh explains that he sees himself as the joker in the pack — a fun, problem-solving alter ego — while Maya is akin to "a mystical, powerful being — a witch to his joker persona". J&W also stands for jewellery and watches — though they now also make accessories like sunglasses and clutches. Initially targeting Gen Z and millennials, they spotted a gap in af-

fordable well-designed watches that brands like Titan and Fossil could not fill, and began offering those as well as modern daily-wear jewellery. Starting out with aspirationally designed watches priced ₹800-₹1,500, they have now expanded the range to ₹700-₹3,000. Teejh was set up in 2019 when Varma saw a white space in affordable jewellery for daily wear. The name Teejh was inspired by childhood memories of Indian festivals, and its identity and persona is quite a contrast to that of Joker & Witch. From oxidised jewellery, it has expanded into sarees — both focus on wearable, non-ostentatious pieces. **BRAND STRATEGY** Singh, a MICA alumnus, believes that a brand is an extension of how founders think. Since both he and his wife are old-school and driven by conventional values, they decided their brand would not be measured by how much money it raised. "Hence we kept it bootstrapped," he says. The other thinking that shaped their product offering was their refusal to chase



**AFFORDABLY CHIC.** Maya Varma and Satish Singh, co-founders of Joker & Witch and Teejh

trends. At the time they launched, smart watches were getting to be popular but they contrarily chose to go with analogue watches, positioning them as fashionable. They launched their website in 2016, focusing on content creation. Singh says three Cs — content, community and commerce — have shaped their brand strategy.



**PERFECT PAIRING.** The watch-and-bracelet combo design has done well for the company

"Simple communication done consistently can reap dividends over a long period of time," he says. In addition, three Is have helped growth — Instagram, innovation and influencers. "Instagram has been one large, strong canvas for lifestyle and fashion brands. In fact, I would say, don't do heavy investments on Facebook and YouTube,"

he advises. Innovating smartly has also propelled the brand. For instance, Joker & Witch began pairing watches with bracelets and that worked. Then they started a triad with rings added. "Also the presentation of the product did wonders for us," says Singh.

**COPING WITH COMPETITION** So far so good. But the branded affordable artificial jewellery space is suddenly getting crowded. How do they plan to navigate that? "By staying true to our core," responds Varma. "Even today, 50 per cent of our sales on Teejh come from our oxidised jewellery. So we will stay focused on that," she says. "In the lifecycle of a brand, if your products are good, your after-sales service is top-notch, a customer tends to like you. Over time, likeability becomes lovable, and then becomes an obsession," says Singh. "I think we are in the 'likeability' stage. We will do our best to get to the place where customers are obsessed with us," he says.

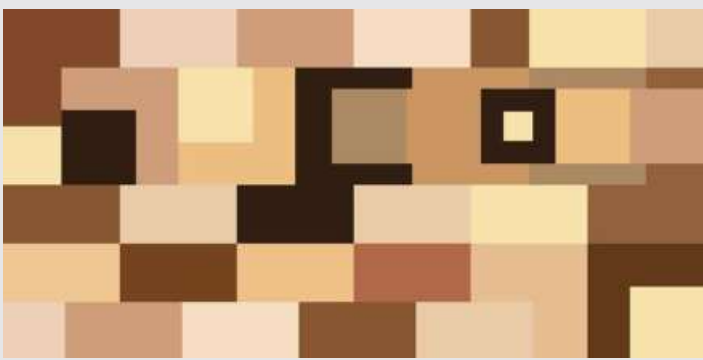
## Unpretentious, earthy and comforting — brown is the new colour in town

Pantone's 'colour of the year' pick taps into the collective need for stability amid the raging chaos and conflict all around us



The Pantone Color Institute has declared its colour of the new year 2025 — 'mocha mousse', an evocative soft-brown. When I first saw this lovely colour, it suggested cocoa, coffee and chocolate, and it also made me feel nice and cosy. The colour brown was already trending in some product categories for the past few months and now, with this announcement, it is likely to rock in the year ahead. Pantone's 'colour of the year' pick is based on its study of cultural trends, the prevailing mood and the desires bubbling up across the world. Here is what Laurie Pressman, Vice-President of Pantone Color Institute, says about mocha mousse: "For Pantone colour of the year 2025, we look to a mellow brown hue

whose inherent richness and sensorial and comforting warmth extends further into our desire for comfort, and the indulgence of simple pleasures that we can gift and share with others." In essence, this colour taps into the collective human need for comfort and stability, which is a reaction and counterpoint to the chaos and conflict we see all around us — including two major wars and rising geopolitical conflicts day after day. Brown is, after all, the colour of the earth, which stands for solidity and stability. **NOT A BRAND FAVOURITE** Given all these positive connotations, it is surprising that not many brands in India actively use brown. How many major Indian brands of cars or household durables or foods or lifestyle accessories have you come across that use a brown logo or packaging or a signature shade of brown? There are a few exceptions but most appear to have shunned brown because they may have viewed it as non-aspirational — neither bright nor



**NICELY BROWNED.** Cosy colours of brownies, croissants, and coffee

impactful. Now, with brown deemed colour of the year, marketers have yet another opportunity to use it across product, retail and online touchpoints. You may ask why use brown just because it has been declared colour of the year? Here are a few good reasons. First, brown conveys warmth and comfort, stability and solidity — highly desirable emotive states for most consumers, particularly in today's VUCA (volatile, uncertain, complex, ambiguous) world.

Second, brown is the colour of the earth. It stands for sustainability and something that is natural. With the rising focus on the environment, this attribute will appeal to a large segment. However, it will work only if the underlying product is environment-friendly. Third, brown is an unpretentious colour, unlike purple or red or silver or gold. This will resonate with people who wish to get back to simple, happy living after the hectic pace and deceptive charms of modern digital-powered life,

which is alluring but exhausting. Fourth, brown subliminally cues small affordable pleasures, perhaps because of its association with delicious daily products such as chocolate and coffee. Therefore, it may be a perfect choice if a marketer wishes to position his or her product in the "everyday indulgences" zone. Fifth, brown is a hugely under-utilised colour; therefore, the arena is wide open. Beautiful brown products, brand logos or online interfaces — whether for refrigerators or motorcycles or garments or packaged goods or e-commerce sites — are likely to cut the clutter. I began the new year determined to cut down on sugar, whether white or brown. But even as I have been writing this article, I have been wondering: Why not make an occasional exception for dark brown chocolate or delicious mocha mousse?

Harish Bhat is an avid marketer and bestselling author. He was previously the Brand Custodian at Tata Sons



Jensen Huang, Co-founder and CEO of Nvidia Corp, at the CES



JH Han, CEO, Samsung Electronics

nearly all consumer electronics firms. From sleep and fitness monitoring wearables, the product range has expanded to include glucose monitors and mental health and nutrition trackers. As for sustainability, the focus intensified with many gadgets using renewable energy — especially solar power. There was a huge focus on battery and energy storage technologies. Some exciting developments were showcased, like a charging hub where your mobile could be fully charged in two seconds (through a change of battery).

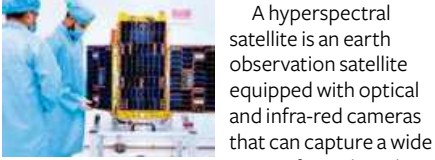
**RIDING ON PARTNERSHIPS** A noticeable trend at CES 2025 was the many companies collaborating together. We saw Sony pairing up with Honda for its EV Afeela, Nvidia announcing it was helping Toyota with its autonomous vehicle development, and Microsoft talking about its partnership with Volkswagen, GM and Ford to speed innovation, among many others. The future lies in big brands collaborating.



FROM THE LABS.

Pixxel’s hyperspectral satellite set for launch

Pixxel Space’s first commercial hyperspectral satellite, named ‘Fireflies’, is to be launched into space by SpaceX Transporter-12 rocket on January 14.



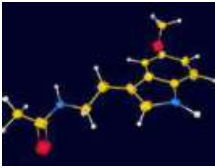
A hyperspectral satellite is an earth observation satellite equipped with optical and infra-red cameras that can capture a wide range of wavelengths, split into many narrow spectral bands. To put it simply, they provide very high-resolution images.

The space startup, backed by investors such as Accenture Ventures, Blume and Lightspeed, has three demo satellites in orbit; it intends to launch six commercial ones this year, and 18 more in 2026 and 2027.

The first three of the six are smaller, weighing 50 kg each; the others will weigh 200 kg each. Pixxel’s satellites are designed to provide 5-metre resolution while capturing 150 bands of wavelengths — making them state-of-the-art.

New light on melatonin

Scientists have proved that nano-formulation of melatonin, the hormone produced by the brain in response to darkness, showed



improved antioxidative and neuroprotective properties and could be a potential therapeutic solution for Parkinson’s disease (PD).

One of the most common neurological disorders, PD is caused by the death of dopamine-secreting neurons in the brain due to the aggregation of synuclein protein. Available medication can only minimise the symptoms but cannot cure the disease, and this underlines the need to develop improved therapeutic solutions.

Studies over the last decade have shown the implications of PD-related genes in governing a quality control mechanism called ‘mitophagy’, which identifies and removes dysfunctional mitochondria and reduces oxidative stress.

Among several other antioxidants, melatonin, a neurohormone secreted from the pineal gland (an endocrine gland present in the brain) that regulates the sleep-wake cycle and is used to treat insomnia, could be a potential inducer of mitophagy to mitigate PD.

The molecular pathways melatonin follows as a PD antagonist remain poorly elucidated, despite being a safe and potential neurotherapeutic drug with a few limitations like less bioavailability, premature oxidation, and so on.

A group of researchers from the Institute of Nano Science and Technology (INST), Mohali, used human serum albumin nano-formulation to deliver the drug to the brain and studied the molecular mechanism behind melatonin-mediated oxidative stress regulation.

Using a biocompatible protein (HSA) nanocarrier for the delivery of melatonin to the brain, Dr Surajit Karmakar and his team have proved that nano-melatonin resulted in a sustained release of melatonin and improved its bioavailability.

They found that nano-melatonin demonstrated enhanced antioxidative and neuroprotective properties. It not only improved mitophagy to remove unhealthy mitochondria but also improved mitochondrial biogenesis to counteract a pesticide (rotenone) induced toxicity in an in-vitro PD model.

The improvement is attributed to the sustained release of melatonin and targeted delivery to the brain, resulting in increased therapeutic efficacy compared to bare melatonin.

The increased antioxidative effect is a result of mitophagy induction through the upregulation of a crucial epigenetic regulator called BMI1, which controls gene expression. The reduction in oxidative stress contributes to alleviating the symptoms of Parkinson’s disease.

GENETIC TWEAK

Nitrogen fix

SOIL-FRIENDLY. Cost-effective boost for plant growth

Team Quantum

Reducing fertilizer consumption while ensuring plants have adequate nitrogen uptake is a problem that researchers are attempting to crack. The National Institute of Plant Genome Research (NIPGR) in New Delhi has now developed a way of improving ‘nitrogen use efficiency’ (NUE) by merely reducing nitric oxide content in plants (mainly rice).

Current NUE pathways focus on agronomic practices such as the application of inorganic nitrogen fertilizers in split doses and slow release of the fertilizer. These come with their share of pitfalls — additional operational costs to farmers and higher emission of nitrogen oxides.

The researchers at NIPGR have developed a simple alternative to agronomic pathways. The team — comprising Dr Jagannath Swain, Dr Jagadis Gupta Kapuganti, Dr Nidhi Yadav and Dr Sanjib Bal Samant — adopted a “pharmaceutical approach”. Using genetic engineering, they got the experimental plants to produce more phytoglobin, a molecule that captures and destroys nitric acid (NO). For this reason, phytoglobin is called the ‘NO scavenger’. When nitric acid levels fall, it triggers a chain reaction. Plants produce more ‘nitrate transporters’ — specialised proteins found in the membranes of cells in roots. Nitrate transporters absorb nitrate, a form of nitrogen present in the soil, and move it up into the plant. Plants use nitrate to produce molecules such as amino acids and proteins, which are needed for their growth.

UNKNOWN PATHWAY

By “overexpressing” phytoglobin, the plants in the study produced more ‘high-affinity nitrate transporters’ (HATs), which sucked up more nitro-

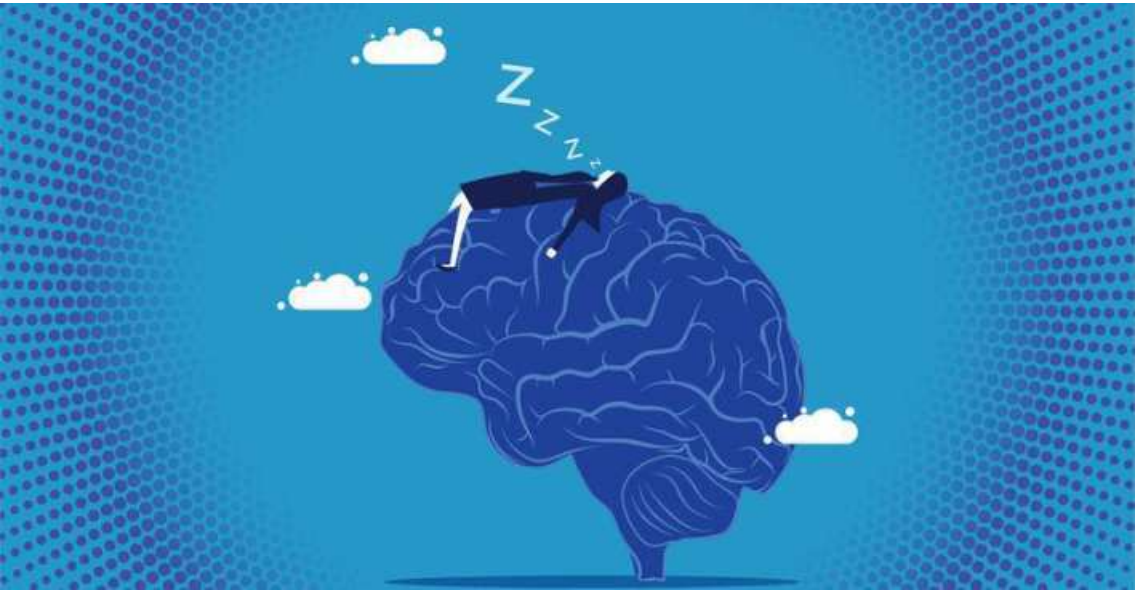
gen from plants. On a field, this method can help reduce the application of fertilizers. “This innovative approach diverges from traditional, costly, and environmentally harmful fertilizers. Instead, it genetically and pharmacologically modulates NO levels to regulate HATs, offering a sustainable solution to boost crop yield with reduced nitrogen inputs,” says a press release from the Department of Science and Technology.

This research is shining a light on a hitherto unknown pathway for NUE. More research in this direction can lead to better results. Dr Kapuganti points out that the current study offers a promising pathway to develop novel NO scavenging formulations for different agroecosystems to improve NUE and reduce the need for nitrogen fertilizers. Now the team is trying to identify bacteria which, when introduced in the soil, can act as NO scavengers in the plants, leading to improved NUE.



ISTOCK

WOW. Welcome brain drain



M Ramesh

Are you taking sleep tablets? Well, they may allow you to sleep peacefully but there is a flip side.

Every night our brain undergoes a process of rinsing. It has been known about for a decade now — thanks to the work of Dr Maiken Nedergaard at the University of Rochester — that when we sleep the ‘glymphatic system’ in the brain releases the cerebrospinal fluid to flush out toxic

chemicals that have entered the brain because of our metabolic activities.

New research has discovered how the efficiency of the glymphatic system is regulated by a chemical called norepinephrine, which is both a hormone and a neurotransmitter. The higher the levels of norepinephrine, the more alert you are.

When you take a sedative, it depresses the level of norepinephrine, which brings down your alertness and lets you drift off into sleep. But low norepinephrine

means the glymphatic system is not working well which, in turn, means the cleansing of the brain is not happening as it should.

This was discovered through experiments on mice by a group of researchers that included Nedergaard, and their findings have been published in the journal *Cell*. But the researchers say this pretty much holds for humans too.

Moral of the story: Junk your sleeping tablets and allow yourself to be brainwashed.

SAILING GENERATOR

Why India should explore the idea of floating nuclear power plants

Successful Russian prototype holds out promise for a novel energy source along India’s extensive coastline

Venkatachari Jagannathan

Nuclear-powered submarines, icebreakers and traditional nuclear power plants are now passé for Russia’s integrated nuclear power company Rosatom State Atomic Energy Corporation.

With a floating nuclear power plant (FNPP), Akademik Lomonosov, functioning in the Arctic port town Pevek since 2019, Russia is now eyeing a global market, including India, for such units.

An FNPP is located on a ship and can be connected or disconnected to the power lines of a coastal town; it can be towed to any location, as needed.

Akademik Lomonosov — named after 18th century Russian scientist Mikhail Lomonosov — is docked on the icy shores of the East Siberian Sea.

The vessel houses two small lightwater reactors with 14-15 per cent enriched uranium fuel, each with a generation capacity of 35 MW — like those powering Russia’s icebreaker vessels.

Given that India is blessed with a 7,500-km coastline and several islands, the question is whether such a ship-mounted small nuclear power plant can be used to power its islands or coastal towns. The life of such plants is about 40 years and can be extended.

ACCRUED EXPERTISE

Russia is building four more FNPPs of 50 MW capacity for its use. As of December 19, 2024, Akademik Lomonosov has supplied about 978 million kWh of electricity to the Chaun-Bilibino energy hub in Chukotka, meeting the region’s energy needs for more than a year.

Rosatom is working on a new



OFFSHORE ENERGY. Russian floating nuclear power plant Akademik Lomonosov REUTERS

floating nuclear power plant with four reactors at Cape Nagleyynyn in Chukotka and a land-based small modular reactor with the latest RITM-200 reactor in Ust-Kuyga, Yakutia.

OPTIONS BEFORE INDIA

Can India look at the option of a floating nuclear power plant?

Rosatom’s Director General Alexey Likhachev has said that the company is interested in expanding cooperation with India,

including implementing floating and land-based nuclear power units, apart from serial construction of high-powered plants.

The floating plants need no land, are inherently earthquake resistant, have an abundance of water for active or passive cooling, and have no need for spent fuel storage facilities on land. Rosatom officials say the FNPP will not leave any nuclear traces, and the vessel can be decommissioned at a specified place.

As in the case of the 1,000 MW power plants at Kudankulam in Tamil Nadu, both countries can work in cooperation for the FNPPs.

At an event in Moscow in 2023, Likhachev had said the two countries could cooperate in constructing small floating nuclear reactors. Russia can provide the nuclear heart (reactor) and other systems while

India can take care of the tow boat and the electrical systems needed for an FNPP.

COST FACTOR

A retired senior official of the Indian nuclear sector said the government must identify one or two shipyards and look at series production of vessels for housing small nuclear power plants.

“The cost of such plants will be a major factor for India. Russia has nuclear icebreakers. They can build new plants or remove the nuclear power plants from icebreakers and mount it on a barge as a floating nuclear power plant,” the Indian official, who declined to be identified, said.

As for fuel, it can be imported if the plants are under the International Atomic Energy Agency (IAEA) safeguards.

The writer is an independent journalist based in Chennai

CANE-DO INNOVATION

Jaggery making hits sweet spot with use of solar power



NEW TURN. Traditional jaggery making involves burning bagasse PTI

Yasaswini Sampathkumar

Jaggery making is a cottage industry that provides livelihood to millions but, on the flip side, it has a negative environmental impact as the conventional manufacturing process involves open earth furnaces burning bagasse — a fuel with poor combustion characteristics. Some production units also use alternative fuels such as plastic or rubber waste, releasing harmful flue gases through chimneys. These practices can also reduce product quality, leading producers to use artificial additives to enhance appearance for market value.

Now, researchers led by Prof KS Reddy, at IIT-Madras’ Heat Transfer and Thermal Power Lab, have developed a solar-powered method for jaggery production that could transform this traditional sweetener’s environmental impact. With the use of sustainable energy, it addresses both the pollution and inefficiencies of current practices in jaggery production.

The system uses solar stills to produce jaggery from sugarcane juice. The approach combines refrigeration and solar heating, reducing energy requirements from nearly 100 MJ to 11 MJ per kg of jaggery produced.

THREE-DAY PROCESS

On day 1, freshly harvested sugarcane is steamed to soften its outer shell. Extracted cane juice is then cooled to remove water in the form of ice.

On day 2, the juice undergoes secondary concentration in a series of solar stills. These stills

leased nutrients useful to plants, such as phosphorus and potassium. While the aromatic compounds are insoluble in water, the released nutrients are soluble and can be absorbed by plants. “They also produce substances called siderophores, which help plants absorb iron in nutrient-limited environments,” notes an article on the IIT-Bombay website. Further, the bacteria also contribute to plant growth and health by producing the growth hormone indoleacetic acid.

“While these bacteria are cleaning the soil, they are also helping plants grow healthier and more robust by fertilizing the soil and improving soil health,” Prof Phale says in the article.

Interestingly, when these two groups of bacteria were used together, they produced even more beneficial results. “The consortium displayed strong plant growth promoting as well as phytoprotection ability against toxicity of aromatics,” the researchers say in a paper published in *Environmental Technology & Innovation*.

The ability of the two genera to co-exist is notable because you can then make biofertilizer-cum-biocontrol formulations.

Phale notes that these bacteria can eat up harmful fungi too. In the future, researchers want to test how these bacteria can benefit plants during droughts and other environmental stress conditions.

“The assistive eco-physiological traits (biofilm, resistance to fusaric acid and salinity tolerance) displayed by strains indicated their better adaptability, survival and niche colonisation behaviour under environmental extremities,” the paper says.

utilise solar radiation and external reflectors to evaporate the remaining water content. The system can also operate without direct sunlight, using auxiliary heating methods.

On the final day, the concentrated juice is heated in batches to eliminate the remaining moisture, producing high-quality jaggery.

VALUABLE BYPRODUCT

The method generates distilled water as a valuable byproduct. The added revenue from distilled water production can reduce the payback period to less than five years.

Under optimal conditions, the system produces 100 kg of jaggery and 169.78 kg of distilled water daily while reducing carbon dioxide emissions by 3,000 tonnes over its operational lifetime.

“Logistics, cost and awareness are critical,” says Reddy. “At the moment, we are working with internal teams in IIT to ensure that deployment on the field is effective.”

The system achieves nearly 50 per cent energy efficiency under solar conditions.

While still in the research phase, this approach demonstrates how traditional food production processes can be modernised to meet both environmental and economic demands. Its potential success could offer a model for integrating renewable energy into other food production systems.

Yasaswini Sampathkumar is a writer based in Guwahati

We value your feedback. Do send your comments to quantum@thehindu.co.in





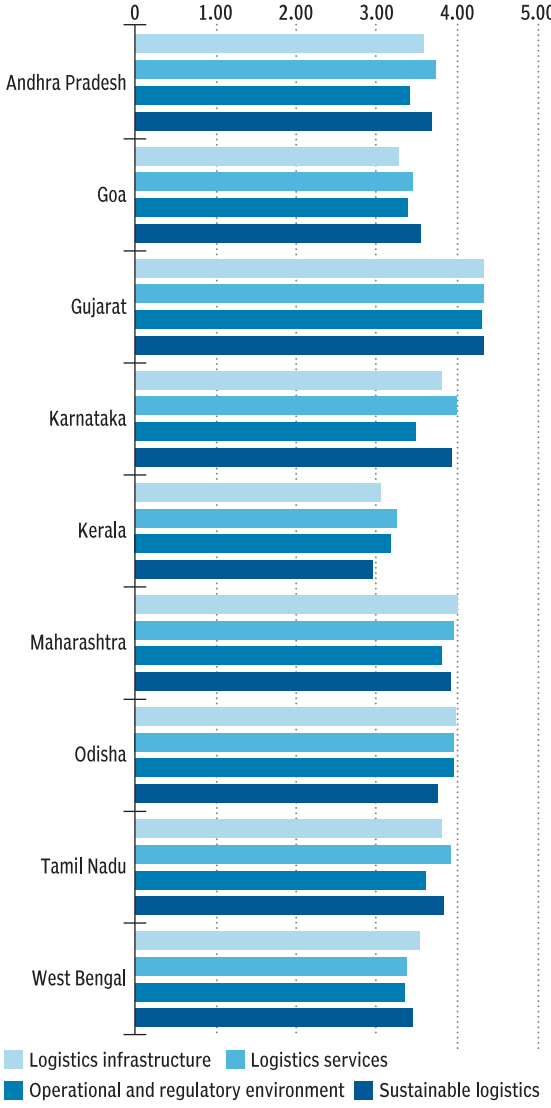
MAJOR HAUL. Deendayal Port in Kandla, Gujarat REUTERS

How coastal states power exports and infrastructure development

In FY2023–24, the coastal states of India together accounted for 65 per cent of exports, led by Gujarat (31 per cent), Maharashtra (15 per cent) and Tamil Nadu (10 per cent).

Logistics infrastructure improved by 3 per cent across the coastal states, logistics services grew by 9 per cent, and operational and regulatory environment improved by 4 per cent.

A State-level comparison of the logistical parameters on a scale of 0 to 5:



FEEDBACK

Need for offshore windmills

The article ‘High on delivery, low on cost’, published in *businessline* dated December 30, 2024, comprehensively captures the performance of the country’s logistics sector in the year gone by.

To take forward the achievements in the sector, the ministries concerned must float a tender for the establishment of offshore windmills for electricity generation.

The onshore generation of wind energy can be augmented by establishing battery energy storage system (BESS) to power the straddle cranes and other heavy duty vehicles operating in a major port like Thoothukudi.

Tuticorin port is ideally suited for a pilot project on these lines. To further promote sustainability, ports may deploy fleets of two- to multi-axle heavy duty electric vehicle that are currently manufactured in the country. Such measures can enable Thoothukudi and other ports to obtain a green tag from UNFDDCC, as also carbon offset credits.

C Rajan Padmakumar  
via email

Truck rental rates

Rentals for 18-tonne payload

Truck route	Rentals as on		% change
	Jan 2	Jan 9	
Delhi-Mumbai-Delhi	1,55,000	1,54,000	-0.65
Delhi-Nagpur-Delhi	1,50,000	1,51,000	0.66
Delhi-Kolkata-Delhi	1,56,500	1,56,000	-0.32
Delhi-Guwahati-Delhi	1,86,500	1,85,500	-0.54
Delhi-Hyderabad-Delhi	1,87,000	1,88,000	0.53
Delhi-Chennai-Delhi	2,11,500	2,10,500	-0.48
Delhi-Bengaluru-Delhi	2,11,500	2,09,500	-0.95
Delhi-Ranchi-Delhi	1,58,000	1,60,000	1.25
Delhi-Raipur-Delhi	1,48,800	1,50,000	0.80
Delhi-Kandla-Delhi	1,29,500	1,30,000	0.38
Mumbai-Chennai-Mumbai	1,56,200	1,55,000	-0.77
Ludhiana-Hyderabad-Ludhiana	1,95,200	1,97,000	0.91
Mumbai-Kolkata-Mumbai	1,94,200	1,95,000	0.41
Chennai-Ahmedabad-Chennai	2,01,200	2,02,000	0.40
Bengaluru-Kolkata-Bengaluru	2,04,500	2,05,000	0.24
Bengaluru-Mumbai-Bengaluru	1,28,200	1,27,500	-0.55
Delhi-Thiruvananthapuram-Delhi	2,75,000	2,74,000	-0.36
Guwahati-Mumbai-Guwahati	2,70,500	2,71,000	0.18
Nagpur-Chennai-Nagpur	1,50,000	1,52,000	1.32
Kolkata-Guwahati-Kolkata	1,41,400	1,42,000	0.42
Indore-Delhi-Indore	1,34,200	1,35,000	0.59
Ahmedabad-Indore-Ahmedabad	86,500	87,000	0.57
Vijayawada-Mumbai-Vijayawada	1,50,300	1,51,000	0.46
Vijayawada-Kolkata-Vijayawada	1,46,300	1,47,000	0.48
Mumbai-Nagpur-Mumbai	1,02,000	1,05,000	2.86
Mumbai-Pune-Mumbai	45,000	47,000	4.26
Mumbai-Aurangabad-Mumbai	65,000	66,000	1.52
Mumbai-Nashik-Mumbai	45,000	46,000	2.17

Figures in ₹

Source: Subham Freight Carriers India Pvt Ltd

MISSION 2030

Railways targets 80% of coal freight

LUCRATIVE PAYLOAD. Following a 9 per cent jump in coal volumes, the transporter gears up to haul more of this vital fuel

Abhishek Law

Indian Railways is set to redouble efforts to increase freight movement, with coal loading witnessing 8–9 per cent increase in both volume and value terms. Other major freight categories like cement, raw materials and imported coal witnessed a decline in loading, according to the latest (January first week) figures from the national transporter.

Earnings from coal loading (including imported coal) account for nearly 50 per cent of the Railways’ freight earnings.

Coal loading (excluding imported coal) until the first week of January 2025 was around 528 million tonnes (mt), up by 41-odd mt year-on-year. Earnings from coal loading stood at ₹59,100 crore, up by around ₹4,709 crore.

Imported coal loading declined by about 10 per cent y-o-y in volume terms. Loading until January 5 stood at 74.38 mt, down by 9–10 mt from the same period a year ago. However, earnings from the segment plunged 18 per cent to ₹7,210 crore.

The other freight categories that saw an increase in loading included refined petroleum products and containers.

Freight earnings until December were ₹1,25,109 crore, up by about 3.5 per cent y-o-y.

COAL LOGISTICS PLAN

A senior Railways official told *businessline* that as part of the National Coal Logistics Plan — which aims to increase the country’s annual coal production to 1.5 billion tonnes by FY30 — about 37 railway projects have been identified to plug critical gaps.

One lakh additional wagons would be needed for the projected 86 per cent of coal evacuation by rail by FY2030.

“The Ministry of Railways has undertaken the procurement of these wagons for coal evacuation,” the official said, adding that an origin-destination study of coal movement is currently underway, based on congestion analysis and other scientific data.

This had led to the identification of gaps in railway infrastructure in the blocks currently in operation and those set to be operationalised for the country’s peak production requirement.

COASTAL MOVEMENT

Incidentally, there is a suggestion to in-



RED-HOT CARGO. Earnings from coal loading, including imported stock, account for 50 per cent of Railways’ freight income BLOOMBERG

Indian Railways’ yearly cumulative freight loading

Commodity	As of January first week, 2025		As of January first week, 2024		Variation year-on-year		% variation year-on-year	
	Loading (in million tonnes)	Earning (in ₹ crore)	Loading (in million tonnes)	Earning (in ₹ crore)	Loading (in million tonnes)	Earning (in ₹ crore)	Loading	Earning
Coal (excluding imported coal)	527.794	59,100.619	487.129	5,4391.867	40.665	4,708.752	8.348	8.657
Imported coal	74.381	7,210.13	83.443	8,795.721	-9.062	-1,585.591	-10.86	-1,8027
Raw material and steel product (except iron ore)	21.51	2,102.217	21.618	1,899.048	-0.108	203.169	-0.5	10.698

Source: Indian Railway

crease coastal movement of coal from 40 mt per annum to about 120 mtpa, for which critical railway infrastructure gaps have been identified.

These gaps include the need for rail-over-rail in Cuttack and the four-lining (to be upgraded to four tracks) of the Cuttack-Paradip railway line.

“Authorities of Paradip, Dhamra and Gangavaram port are taking measures to enhance their coal handling capabilities,”

a second official said.

With the Integrated Coal Logistics Plan in place, the railways’ share of coal transportation is expected to increase to 87 per cent while lowering the share of road transportation. Integrated first- to last-mile rail connectivity and identification of infra gaps could help cut rail logistics cost by 14 per cent.

“The cost savings identified, as per the plan, is around ₹21,000 crore per an-

ESSENTIAL MARINE WORKERS

‘Don’t criminalise seafarers’

TE Raja Simhan



FREEDING SEA PASSAGE. Nikolaus Schues, President, BIMCO BUJOY GHOSH

In May 2023, Nikolaus Schues took over as president of the Baltic and International Maritime Council (BIMCO), a non-profit organisation and the largest international shipping association. With over 2,000 members in 130 countries, it accounts for 62 per cent of the world’s tonnage. Its members include ship owners, operators, managers, brokers and agents.

Schues is passionate about issues related to seafarers and sectors such as ship recycling. During his visit to Chennai recently, he shared with *businessline* his views on some of these issues.

Edited excerpts from the interview:

What is the status of present-day seafarers?

We have to stress again and again that seafarers are the backbone of shipping. Without seafarers, there is no shipping. We, at BIMCO, say that without shipping, there’s no supply of essential goods. We have to make sure that politicians, regulators and voters acknowledge that. So the medium-term aim is that seafarers get ‘key worker’ status. It will help them — like during the Covid pandemic — travel more freely and have better access to airline transportation, etc.

What are the major concerns related to seafarers?

A major issue we have to work on is that the criminalisation of seafarers should stop. Nobody would think of arresting a pilot of an airplane because some drugs were smuggled in the suitcase of a passenger. But, in shipping, if drugs are found in a container ship, the crew is at risk of being arrested in some parts of the world. That is unacceptable. We have to work with the jurisdictions of many countries, and we want to improve the situation for the affected seafarers. We are doing this with the International Maritime Organisation and the International Transport Workers’ Federation. The International Labour Organisation has to look into this,

and various countries need to do their part as well. Criticising does not help, supporting helps.

How about threats to seamen from pirates or terrorists?

Yes, seafarers are at threat, either from piracy or by terrorists. The most prominent example at the moment is in the Red Sea, where many ships have been attacked and some are still under arrest.

This is unacceptable in a world of free trade, and prosperity comes from free trade. BIMCO is doing everything it can to defend free passage in the sea.

What trend can we expect in the supply of seafarers to the global merchant fleet?

In about two years, BIMCO will publish its next ‘Seafarer Workforce Report’, which is most likely to find that there will be a scarcity of seamen, especially officers, in the next decade. The market is there. After China and the Philippines, India is already the third largest supplier of seamen. This proves that India is doing many things correctly.

Why is there likely to be a shortage of seafarers?

This would be the result of many

ships coming in and the retirement of seafarers. We know fairly well what the education level of the cadets is. So we foresee a shortage. If there is a scarcity and you pay a little more money, there will be more cadets.

What should the entire ecosystem do to improve the situation?

Indian schools and universities could concentrate on adapting to ships in transition. Renewable fuels, different engines, more digitalisation and additional equipment, such as air lubrication, demand more education in these fields. Elder seamen may have difficulties adapting to these but the younger ones will easily learn them and be prepared.

How about ship recycling in India?

By June, the Hong Kong Convention will come into force and all recycling yards will have to adopt its requirements. We believe this will change the future of the global ship recycling industry.

I think the position in India is fantastic, with the country having abundant renewable energy to produce green steel from the ships.

CENTRE-STATE TUSSLE

Row over viability gap funding for Vizhinjam port



SHORING UP FUNDS. At the Vizhinjam seaport PTI

V Sajeew Kumar

A political row has erupted between the Kerala government and the Centre over the release of viability gap funding, to the tune of ₹817.80 crore, for the Vizhinjam International Seaport project. The Kerala government argued that the Centre should release the money without stipulating repayment. Chief Minister Pinarayi Vijayan said the demand for repayment would result in an outgo of ₹10,000-₹12,000 crore from the State exchequer.

He also pointed out that the Centre had not made a similar condition of repayment for the outer harbour project of VOC Thoothukudi Port, which is structured on similar lines as Vizhinjam.

Vizhinjam port had received in-principle approval for viability gap funding under the ‘scheme for financial support to public-private partnerships in infrastructure’. The empowered committee constituted by the Department of Economic Affairs had recommended the project for final approval for ₹817.80 crore, the Chief Minister said.

Replying in the Rajya Sabha, Shipping Minister Sarbananda Sonowal clarified that, as per the approved financing arrangements of the Vizhinjam International Seaport project, the Kerala government must share with the Centre 20 per cent of the premium that the State will receive from the concessionaire from 2034 onwards. The State shall retain the rest.

The Minister pointed out that Kerala’s request to waive off the premium sharing between both governments had been deliberated upon and declined at the empowered committee meetings held in June 2022 and July 2024.

However, a request for the waiver was received in October 2024. After consideration, the request was not accepted as premium sharing was one of the conditions of the “in-principle” as well as final approval for the viability gap funding, the Minister said.

Referring to the outer harbour project in Thoothukudi port, the Minister said it is a central sector project wherein the expenditure is incurred by and the revenues accrue to the VOC Port Authority, an autonomous body under the administrative control of the Union government.



MY FIVE.

**RICHA SINGH**  
Founder and Chief Executive,  
YourDOST



Mindful walks with kid and Penny,  
yoga, and table tennis

- 1 Intent: I wake up at 4.30-5 am, giving myself time to set the tone for the day. Before the rush sets in, I practise mindful walking with my son Rudra and our dog Penny. This simple ritual helps me stay centred, and just 10 minutes of meditation improves focus and clarity.
- 2 Yoga: It's more than just exercise — it helps build flexibility, inner strength and resilience. Stretching, breath-work or mindful movement — it keeps body and mind in harmony.
- 3 Traditional diet: I prefer homely food, as breakfast is heavy, followed by light lunch. Dinner is early and light.
- 4 Unwinding: Fitness isn't just about workouts but having fun too. Playing table tennis, solving sudoku puzzles and listening to music helps unwind, keeping my mind sharp. I also love getting lost in a good book.
- 5 Wellness: Positivity is a muscle we must exercise daily. Whether through gratitude or mindful moments — I stay connected, grounded and joyful. Wellness is also about emotional well-being. Reading the Gita and attending classes provide me with clarity, grounding and perspective, helping me approach life's challenges with calm and wisdom.

CAPSULES.

Attacks force 'Doctors Without Borders' to halt hospital duty

Médecins Sans Frontières/Doctors Without Borders (MSF) has condemned ongoing violent attacks on patients and staff at Bashair Teaching Hospital, located in a Rapid Support



Forces-controlled area of Khartoum, a note from the agency said. Despite extensive engagement with all stakeholders, the attacks have continued in recent months, MSF said. The humanitarian agency has now taken the "very difficult decision" to suspend all medical activities in the hospital. In the 20 months MSF teams have worked alongside staff at Bashair Hospital, there have been repeated incidents of armed fighters storming in with weapons and threatening medical staff, often demanding that fighters be treated before other patients, it said. "The suffering we witness in Khartoum is enormous. Intense and extreme violence continues daily. Shortages and blockages of food, supplies and humanitarian aid leave people scrambling to survive. The medical needs are overwhelming. Injuries are often horrific. Mass casualty incidents have become almost routine," said Claire San Filippo, MSF Emergency Coordinator. MSF halted work at the nearby Turkish Hospital in July last year after threats of violence against staff, it said.

COMING UP.

End stigma

World Leprosy Day is observed on the last Sunday of January (January 26 this year). And the theme this time is 'Beat leprosy, end stigma, and advocate for mental well-being'. The theme encapsulates the dual objectives of the event — to eradicate the stigma associated with leprosy and to promote the dignity of people affected by the disease. It also serves as a powerful reminder of the need to address the social and psychological aspects of leprosy, alongside the medical efforts to eliminate the disease. It calls for a world where leprosy is no longer a source of stigma but rather an opportunity to demonstrate compassion and respect for all individuals.

● POST-COVID RECKONING

Prepping for the next pandemic

**FIVE YEARS ON.** What lessons have we gleaned from a health emergency that left the world paralysed

PT Jyothi Datta

On December 31, 2019, the news of a "viral pneumonia" in Wuhan (China) was picked up by the World Health Organization's local country office. WHO employees activated emergency systems on January 1, 2020, and a guidance package was published shortly to help countries manage the new disease. On January 30, WHO declared the novel coronavirus outbreak a public health emergency of international concern — its highest level of alarm. Five years on, the Covid-19 pandemic hovers over our collective consciousness, setting off anxious reactions at the slightest hint of a spike in viral infections. This became evident after recent reports from China on rising respiratory infections due to circulating viruses, including the hMPV (human metapneumovirus) — something which health authorities put down to seasonal occurrences in winter and spring. Against this backdrop, the question being discussed by healthcare professionals, including the WHO, is whether the world is better prepared for the next pandemic? The world has taken several steps forward in learning to collaborate between governments, regulatory authorities and private enterprise, observed Dr Soumya Swaminathan, looking back and forward. However, there's ground to be covered on technology transfer and equitable distribution, she said, adding there's certainly no room for complacency. Swaminathan witnessed the unravelling of developments as the novel SARS-CoV-2 virus brought the world to a grinding halt, having taken charge as WHO Chief Scientist just months ago. Health systems were not prepared in most countries, recalled Swaminathan, with even the rich ones having weak public health infrastructure and responses; the economically poorer countries



**STANDSTILL.** File image of a deserted intersection in Chennai during a pandemic-induced lockdown | VELANKANNI RAJ B

had issues with the health system itself. The health workforce did an amazing job but this took "a very heavy toll", she said — from getting Covid to burnout from the physical and mental strain. Many healthcare workers (doctors and nurses) left the profession, she said, exacerbating existing shortages. There was a huge amount of innovation — nobody could have foreseen how the vaccines, diagnostic kits and point-of-care tests were developed in a short time. "We went from really expensive, high-end PCRs to just everyone doing their own test at home," she said, adding that new vaccine platforms were tested for the first time during Covid. Regulatory agencies worked together, respecting each other's assessments, cutting short access time, she added. **SETBACKS** Though most research and development (R&D) was funded by government agencies, at least in high-income countries "the IP (intellectual property) ultimately was given to private sector". There were no guidelines on how the IP should be used or on tech transfer, she said. Despite efforts by countries like India and South Africa at the World Trade Organization (WTO), there was no agreement during the pandemic or after, she added. The Pandemic Treaty negotiations,



Dr Soumya Swaminathan, former Chief Scientist, WHO | VEDHAN M

for example, have not concluded due to reasons, including differences over tech transfer and equitable sharing, she said, as high-income countries were not agreeing to the principles of equity. "That is a big setback and a disappointment," she said. **GLOBAL NETWORK** Born out of the inequities during Covid-19 is the "mRNA technology transfer programme"; so the next time "we should not be in a position where some countries are begging other countries", said Swaminathan. "You need to build that capacity from bottom up," she said, as a programme that started with Africa is now a global network with 16 centres working on mRNA technology from an open source of information. Each group picks and works on priority

diseases across human and animal infection, like dengue and foot-and-mouth disease, for example. The principle is that anything developed from this collaboration will be available to partners, within a framework, including tech transfer. This should be the model for R&D, she says, where there's "governance and stewardship by an agency like WHO or, at the country level, the government."

BE PREPARED

The government needs to have an agreement with companies, funding research to develop and stockpile priority products (that can be scaled up), with financial compensation. "We can supply not just for India but also to the world if we are prepared in advance," said Swaminathan, echoing the recommendations outlined in a NITI Aayog report on pandemic preparedness, which calls for a contemporary Public Health Emergency Management Act. It's high time India develops legislation that defines roles and responsibilities so "there's no confusion", said Swaminathan. A framework facilitates smooth operation, inter-ministerial cooperation, data sharing, management, surveillance, community engagement and risk communication, she explained, even as health experts caution that the next health emergency is never too far away.

● FROM THE REGULATOR

Need pulse oximeters for all skin tones



The US Food and Drug Administration has published new draft guidance aimed at improving the accuracy and performance of pulse oximeters — important devices for patient care that estimate the amount of oxygen carried in the blood — across the range of skin pigmentation. Scientific evidence suggests variations in pulse oximeter readings for individuals with lighter and darker skin pigmentation. The FDA had previously informed patients and healthcare providers that although pulse oximetry is useful in estimating blood oxygen levels, the devices have limitations, including risk of inaccuracy, under certain conditions. To address these concerns, the FDA has proposed new draft recommendations for manufacturers on ways to gather clinical data, among other details, to help improve the clinical study design and validation efforts for pulse oximeters to evaluate their performance across the range of skin pigmentation. The FDA is committed to working with manufacturers to help ensure the public has access, at the earliest possible, to pulse oximeters that perform accurately across the range of skin pigmentations. Key elements of the FDA's draft recommendations include gathering clinical data (for example, controlled desaturation laboratory study or, in certain cases, real-world data) to evaluate device performance accuracy across the range of skin pigmentations increasing the number of clinical study participants, and so on. The FDA expects that some of the pulse oximeters currently marketed may meet the updated performance criteria without the need for significant hardware or software modifications. In these instances, if a sponsor submits updated labelling to reflect the collection of clinical data that demonstrates comparable performance across skin pigmentations without device modifications, then the FDA intends to review the submission expeditiously (within 30 days).

Source: FDA

LENS ON HEALTH



**LABOUR OF CARING.** Striking nurses, represented by the Oregon Nurses Association, hold a picket line against Providence Health Services in Portland, Oregon | REUTERS

Innovating in India — road ahead for medtech in 2025

BY INVITATION



HIMANSHU BAID

The outlook for India's medtech sector has never been more promising as we look ahead to 2025. With the global industry valued at \$500-\$600 billion, there is immense potential for India to expand its share. The domestic medtech market, estimated at \$15 billion, remains significantly behind global benchmarks. To address this gap, the country must prioritise scaling up the sector to align with international standards. The long-awaited roll-out of the Medical Devices Bill (2023), for example, will help pave the way for greater ease of doing business for this industry. By elevating medical devices as a distinct category with separate regulatory oversight, the bill will enable improved governance over both domestically produced and imported devices.

The government also introduced the production-linked incentive (PLI) scheme for the sector. The initiative is yet to reach its full potential. Expanding the range of eligible products and extending the scheme by 2-3 years will unlock greater participation from companies. With much of the allocated budget still utilised, broadening the range of products covered under the PLI will stimulate growth and enable the industry to flourish. Additionally, greater focus on developing domestic suppliers of high-quality raw materials will help the sector advance to the next stage. This will significantly reduce reliance on imports, bolstering the industry's self-sufficiency and resilience.

CROSS-INDUSTRY TIES

An important trend gaining momentum is cross-industry collaboration, particularly as India's electronics and chip manufacturing sector expands. Harnessing these synergies will strengthen not only the country's medtech supply chain but also its position as a formidable global healthcare player. The nation's ap-



**LIFE-SAVING EQUIPMENT.** The global medtech industry is valued at \$600 billion | ISTOCK

proach is evolving from 'Make in India' to 'innovate, design, and make in India', driving excellence in not only consumables but also high-value medical devices. On the other hand, allocation to healthcare has not increased in the last five-odd years, even as medical inflation continues to rise. To truly fuel the growth of India's medtech sector and provide adequate healthcare to the growing population, healthcare spending must increase to 3 per cent of GDP. This will not only address sectoral challenges but also lay the groundwork for long-term growth and self-sufficiency. Another area of promise is the government's effort to boost export incentives — an increase from 0.6-0.9 per cent to 2-2.5 per cent can accelerate the growth of medtech exports to developed markets. This ensures that exporters can receive refunds on embedded taxes and duties as a percentage of 'free on board'. Similarly, initiatives such as the RoDTEP (Remission of Duties and Taxes on Exported Products) scheme could help mitigate high costs — like those associated with clinical trials and getting foreign regulatory (FDA/CE) approvals — and unlock new export opportunities for Indian firms. Additionally, simplifying the GST structure by consolidating multiple slabs into a unified rate of 12 per cent would streamline compliance. On the back of these initiatives, 2025 could prove transformative for India's medtech sector and its impact on the global landscape.

The writer is Managing Director, Poly Medicure Ltd. Views are personal

Nipping neonatal disorders in the bud

AI-enabled tool helps frontline Asha workers identify low-weight babies and provide early intervention

Preeti Mehra

Jyotsna S Patel from the Union territory of Dadra and Nagar Haveli and Daman and Diu has been a rural health Asha worker for 13 years. In a profession involving long hours of door-to-door primary health intervention in far-flung areas, with payment only in incentives, anything that reduces the work burden is welcome. Like the 'Shishu Maapan' tool on her mobile phone. "I can now record a child's weight and other parameters at his or her home every week after birth by simply taking a video of the child," says Patel. Shishu Maapan is an artificial intelligence (AI) tool, developed by the nonprofit Wadhvani Institute for Artificial Intelligence, to facilitate anthropometry during the first 42 days of a child's life. Research on



**SMART MEASURE.** Asha health workers with a child health monitoring tool on their mobile phones

the tool started in 2019 under the National Health Mission and, after the pilot, it was deployed in Patel's Union territory some months ago. **GROWTH MONITOR** Patel and more than 480 of her colleagues in the region, who have completed around 9,800 home visits, no longer have to lug around a heavy salter scale to weigh newborns week after week. With a trained swish of

the hand, an Asha worker can now take a video of the child and relay measurements of height, weight, chest circumference and head circumference to a health facility and doctor. It will determine whether the child is well or in need of medical intervention. This information is critical at the neonatal stage, as the Unicef estimates that 50 per cent of babies with low weight

are never identified, leading to serious developmental disorders and disability. Early intervention helps improve the child's health and quality of life. The tool makes growth monitoring easier. **IMAGE-BASED ANALYSIS** Dr Sneha Nikam, a senior programme manager leading the maternal and child health programme at Wadhvani AI, explains the tool's role in curbing

infant mortality. After a child is born and until he/she is immunised at six weeks at a health centre, the child's weight and other growth parameters need regular monitoring. With a salter scale, the Asha worker can only approximate the child's weight. Often, she may be unable to visit or carry the heavy scale with her. The Shishu Maapan tool on her smartphone is easier to access, more accurate and offers an image-based analysis. It provides doctors the readings they need to monitor the child's growth remotely. However, developing the tool was no child's play. It took years for a large team of experts, across disciplines, to develop an accurate solution. "Even now we have to customise it for use in each State, according to its geographical location," says Nikam. The team is pilot testing the tool in three States, and hopes to roll it out this year to Asha workers there.



# QUICKLY. ‘No huge advantage in building your own LLMs’

Most iPhone, Android users faced issues post upgrade



**New Delhi:** Around 60 per cent of iPhone users and 40 per cent of Android users in the country have experienced call connection issues after the latest software upgrade, online platform LocalCircles has reported. Call failure is the biggest problem faced by iPhone users while freezing of apps is the biggest issue for Android users. **■**

**Border row: Bangladesh official meets Indian envoy**

**Dhaka:** Foreign Secretary Md Jashim Uddin on Sunday expressed Bangladesh’s “deep concern” over the recent border tensions during a meeting with Indian High Commissioner Pranay Verma. The state-run BSS news agency earlier reported that Verma was “summoned” by the Foreign Ministry. However, a statement issued by the Foreign Ministry did not use that term. **■**

**USE THEM, GET VALUE.** There are opportunities to develop our own LLMs when building Indian language models, says K Krithivasan, CEO and MD of TCS

## bl.interview

**Vallari Sanzgiri**  
**Thomas K Thomas**  
Mumbai

As K Krithivasan approaches his second anniversary as the CEO and MD of Tata Consultancy Services in March, he is optimistic that 2025 will be a better year with AI beginning to move the needle despite a tough period as global tech spends slow down. He spoke about why he is optimistic and how AI deployment is taking shape for TCS and others worldwide.

*Edited excerpts:*

**You’ve interacted with a lot of CEOs in India as well as globally. Do you see them talking about reviving spend on tech?** There are few things holding them back. First, the cloud transformation has to happen. To really leverage AI, the data estate has to be much better and data should be available and accessible. You have to have the ability to use your data with external sources and then come up

with proper recommendations. In addition, many organisations know there’s a high technology debt but we are hearing more discussions about technology modernisation.

**In 2023, you said AI is still not changing the needle for you and the industry. Has this changed?**

The needle is beginning to move. More programs going into production and the maturity of adoption has improved. Understanding what AI can do for organisations are also evolving. Using AI for a small use-case across a wide value chain won’t change anything because having super efficiency in only one small process doesn’t compensate for the inefficiencies in everything else. So, we need to ensure that consumption is done the right way and that there is efficiency all across.

The next important thing is there are areas where new products and services could be launched, something that could not have been done without AI. For instance, in insurance sector, generative applications can actually do 100 per cent compliance

check on all voice calls and give feedback on training. I think such use-case will continue to evolve and become more mainstream. After some time, you may not want to call it an AI application since every application will have some component of AI infused in it. So, there will be elements of AI both in the build process as well as in the final outcome.

**With deals, do you measure how much of that is coming from AI?**

We do track the engagements we are doing internally but it is more to see whether are we doing it across all industries and clients. We believe that we will soon stop tracking the revenue coming exclusively from AI. If I sign a \$100 million application maintenance deal, it will have a component of AI. It will become a theoretical exercise to say that in this \$100 million, should I attribute \$10 million to AI? But we need to ensure anything we do leverages the AI subsystems.

**So internally how are you using AI in your processes and systems?** I am quite excited about AI in

Using AI for a small use-case won’t change anything because having super efficiency in only one process doesn’t compensate for the inefficiencies in everything else. So we need to ensure there’s efficiency all across

**K KRITHIVASAN**  
CEO and MD, TCS



processes. Some of these AI agents are able to tell you not just how you articulated but how you should have articulated. We have traditionally been using resume checkers and other enterprise applications. There is a reasonably strong internal push for AI. It has not changed the way we are hiring but it may after some time.

**There’s a debate on whether Indian companies should be at the forefront of AI innovation or just adopt and build on what already exists. As a**

**leader of IT tech, how do you see this approach towards India stack?**

I don’t think there’s going to be a huge incremental advantage in building your own large language models (LLMs) since there are so many already available. If you go by the existing heritage of most Indian organisations, we are more system integrators. We use the products as a software and ensure that the benefits are given to the customer. If you take a similar approach here, we are better off — at least in the short run — with using the LLMs avail-

able but ensure to use them to really get the value. There are opportunities to develop our own LLMs when regionalising it or building Indian language models. Once you do that, you can bring in more inclusion and democratisation. So, we have to leverage for customers what is already available and create new markets.

**You have a partnership with Nvidia for developing AI solutions and training. How is that progressing?** It’s progressing quite well. Currently, we started banking, financial services, manufacturing and we are developing solutions on those in India stack.

**On the BSNL deal, can you talk about how it actually shaped up and whether you are expecting more 4G deals, especially from private players?**

The deal has progressed quite well, with close to 70,000 sites installed, and about 60,000 carrying commercial traffic. The last set of sites will be more difficult as they will be in more remote areas.

But we are on track to complete them. The reason that we got into the deal is based on the capability we have built to offer this solution to other private players, within and outside India, both on the 4G and 5G stack. Because of the unique and indigenous nature of the solution, it makes the country independent from external influences on critical infrastructure — which, we think is a very strong value proposition.

**You will complete two years in March. What is your experience from your biggest challenges in these two years?**

Yes, I’ve been in this role for two years but I’ve been with the company for 34 years. It’s been a great experience with lots of learning, in terms of understanding expectations from different stakeholders and how society looks up to TCS. I have not achieved all that I set out to achieve because from a growth perspective we have made good progress on the margin front; on the top line front, we have not achieved the double-digit growth. Although market conditions have been challenging, we are aspiring for it.

## Telangana asked to follow AP model for steel plant

**Richa Mishra**  
**Abhishek Law**  
Hyderabad/New Delhi

It’s been a decade, and Telangana is still waiting for the mega integrated steel plant which was promised during the bifurcation of the Telugu State. In what seems like throwing the ball in Telangana’s court, the Centre has asked the State to scout for a private partner to set up the project at one of the sites short listed near the iron ore mines in Mahabubabad.

Telangana Chief Minister A Revanth Reddy, during his recent visit to Delhi, yet again raised the issue of setting up a steel plant in the State.

### PROJECT IN LIMBO

According to sources, the Centre has asked the State government to follow the Andhra Pradesh model for setting-up an integrated steel plant, under which the State partners with a private investor to set up the steel mill.

There are two sites that have been shortlisted — both of which are in Mahabubabad. These sites could source the feedstock from Ramandurg or Donimalai iron ore mines. Iron ore is a key feedstock for steel-making, and it roughly takes about 1.5 tonnes of iron ore to make 1 tonne of steel.

In Andhra Pradesh, AMNS India — a joint venture between ArcelorMittal and Nippon Steel — has reportedly expressed interest to set up a 17.8 mtpa steel

plant at a cost of ₹1.5 lakh crore. The greenfield unit is to be built in two phases, and meetings in this regard have recently been held with the State government and the Ministry of Steel. However, official announcements are yet to be made.

At a meeting Telangana government officials had with Union Home Ministry officials, it was observed that the Ministry of Steel may play a promotional role and facilitate the feasibility study by SAIL. However, alternatively, Telangana may explore setting up a steel plant in collaboration with a private company as planned in Andhra Pradesh.

### HUGE CAPEX REQUIRED

To set up a one million tonne steel plant, a capex of \$1 billion is required (in the blast furnace route). A previous request to set up a steel plant in Khammam district was rejected by the Steel Authority of India (SAIL) as unfeasible. The Ministry of Steel is yet to respond to queries from *businessline*.

A senior official, requesting anonymity, said the Ministry’s mandate was to study “the feasibility of establishing an integrated steel plant in Khammam”, and it was found to be ‘not feasible’.

The official said that consultancy firm MECON had suggested Mahabubabad district as a possible site for the plant.

Subsequently in 2019, it was suggested that Mahabubnagar, which is closer to Karnataka, may be selected.

## IndiGo’s cargo volume up 13.5%, eyes new alliances

**Aneesh Phadnis**  
Mumbai

New planes and partnerships with carriers helped IndiGo carry 13.5 per cent more cargo on a year-on-year basis in CY2024. IndiGo’s fleet size increased to over 400 aircraft (including wet leased planes) in December end-2024 compared to 358 in December 2023. The airline also stitched partnerships with Air France-KLM and FedEx enabling it to increase freight loads to 3.98 lakh tonnes in 2024.

“It was a strong year for cargo with a 13.5 per cent increase in tonnage year-on-year. On multiple occasions, we beat our monthly tonnage uplift records. The freighter utilisation is now approximately 9 hours per day, which is high for narrow body freighter operations,” said Mark Sutch, Chief Commercial Officer (cargo), IndiGo. Sutch said the airline witnessed growth across both business lines — belly space of passenger aircraft and freighters.

Freighters saw the highest growth as IndiGo added its third Airbus A321 freighter in November 2023. “As of date, partnerships are a small part of our business but we plan to grow this overtime in line with our growing international footprint. In 2024, we signed a comprehensive interline agreement with Air France KLM Martinair Cargo,” he said.

## Air India aims to double I-to-I segment in 2-3 years

**Rohit Vaid**  
**Aneesh Phadnis**  
New Delhi

To double international transit passenger count, Tata Group-promoted Air India plans to further optimise its network by adding more overseas flight options and codeshare to destinations in South-east and Far East Asia, as well as Europe and continental US.

Besides new flights, Air India has recently re-timed several of its flights to and from Europe and Australia, and introduced new flights to Southeast Asia to enable convenient connections for those travelling between these regions via Air India’s Delhi hub.

### FRESH INVESTMENTS

Even fresh investments have been made to strengthen the distribution network to make the airline’s inventory more widely available globally.

The move, said Air India’s Chief Commercial Officer Officer Nipun Aggarwal, will allow the airline to connect more international passengers from South-east and Far East Asia to Europe and the US.

It will enable travellers from the US as well as London, Paris and Frankfurt to easily take one-stop connections to Sydney and Melbourne in Australia and to points like Bangkok, Singapore, Kuala Lumpur and Ho Chi Minh City in South-east



**NEW FRONTIERS.** The airline aims to double the size of the transit traffic segment over the next 2-3 years

Asia via New Delhi.

Currently, the international-to-international (I-to-I) segment constitutes around 10 per cent of its overall international passenger traffic.

### FUTURE PLANS

According to Aggarwal, Air India aims to double the size of the transit traffic segment over the next 2-3 years.

The strategy will allow Air India to capture a sizeable portion of an addressable market size of the 130 million I-to-I passenger traffic that India can cater to every year. This number is expected to grow to 200 million by FY35. At present, the majority of this traffic is serviced by the Middle East-based airlines and hubs.

The process is also expected to transform Air India’s three major operational bases in Delhi, Mumbai and Bengaluru into mega international hubs.

From 2023 onwards, Air India has added new flights from Delhi to Milan, Copenhagen, Vienna, Amsterdam and Zurich in Europe, which

are complemented by new flights to Phuket, Ho Chi Minh City and, most recently, Kuala Lumpur, along with frequency increases to Kathmandu, Colombo, Singapore and Bangkok.

The airline has added partnerships with 15 new entities in the last three years, and the traffic on its partner network has grown by 2.5x.

Further, Air India would like to leverage Singapore as an external hub, he said, while talking about the co-operation between the airline and its stakeholder Singapore Airlines. Air India is also in advanced talks with Lufthansa for an expanded codeshare partnership, confirmed Aggarwal.

### FLIGHT FREQUENCIES

While the overall flight capacity has grown by 1.3x since the takeover, the domestic flight frequencies have increased from 445 to 855 in the last three years.

In terms of business development, the airline has completely revamped its corporate product as well as its pricing structure.

## Microsoft rules out layoffs in India amid global job cuts

**S Ronendra Singh**  
New Delhi

Software giant Microsoft has no plans to lay off employees in its India operations, senior company officials have said, amid reports that the company is cutting a small percentage of jobs across departments globally.

“No, not in India,” Puneet Chandok, President, Microsoft India and South Asia, told *businessline* when asked about the reports.

“We are engaged in so many projects. In fact, for all of India, more jobs are being created,” Chandok added.

There have been reports of the company cutting a small percentage (less than 1 per cent) of jobs across departments globally. The company has around 20,000 employees in India, of a total 2,28,000 people worldwide.

The news of job cuts started doing the rounds during the recent two-day visit to India by Satya Nadella, Chairman and Chief Executive Officer of Microsoft.

Nadella announced his company’s \$3 billion investment plans for cloud and AI infrastructure over the next two years.

### AI-FIRST INDIA

“India is rapidly becoming a leader in AI innovation, unlocking new opportunities across the country,” Nadella said, adding that the investments in infrastructure and skilling that he announced reaffirmed Microsoft’s commitment to making India AI-first.



**Puneet Chandok**, President, Microsoft India and South Asia

He said the company aimed to build a thriving AI ecosystem in India by supporting the government and industry in fostering AI innovation and enhancing productivity, efficiency and accessibility.

For the same purpose, Microsoft tied up with the Ministry of Electronics and Information Technology (MeitY) under the IndiaAI Mission and announced partnerships with companies like RailTel, Apollo Hospitals, Bajaj Finserv, Mahindra Group and upGrad to accelerate AI-driven transformation in India.

“We will continue to use AI to unlock possibilities for the next few decades and ensure that communities across the country have access to the compute they need to prosper in the AI era,” Chandok added.

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## Dobjan’s snowy secrets unveiled at winter fest

Two-day extravaganza, aimed at boosting local economy, showcased Kashmir’s offbeat tourism destinations

**Gulzar Bhat**  
Srinagar

At the foot of the Pir Panjal mountains, vast snow-blanketed meadows of Dobjan in the Shopian district — some 70 km South of Kashmir — witnessed a one-of-a-kind snow festival. The two-day event, which concluded on Sunday, aimed to promote off-beat tourist destinations, giving the local economy a boost.

Located along the historic Mughal Road, at an altitude of over 9,000 feet, Dobjan is known for its lofty pine trees, hot water springs — believed to have therapeutic powers — and majestic snow-clad mountains. However, unlike other tourist destinations in the Valley, the surreal landscape has failed to draw tourists and remains largely unexplored. The lack of adequate infrastruc-



**A FROSTY AFFAIR.** Named after the love legend of Heemal-Nagrai, the festival featured a flurry of activities, including snow sculpting, skiing and snow cricket **MIRAN NISSAR**

ture, mobile connectivity and promotional campaigns were seen as key reasons for the limited tourist influx. This year, the district authorities decided to organise a snow fest to showcase the beauty of the area and its storied cultural heritage.

“The festival not only showcases the beauty of the area but also highlights the

possibilities of tourist promotion,” said Mohammad Shahid Saleem Dar, District Magistrate.

Named after the love legend of Heemal-Nagrai, the festival featured a flurry of activities, including snow sculpting, skiing and snow cricket. Local handicrafts and cuisines were the other highlights.

In 2024, the Valley re-

ceived around 3 million tourists with a 10 to 12 per cent increase in foreigners. Most of the visitors, however, preferred to visit prominent destinations like Gulmarg and Pahalgam, leaving the off-beat destinations relatively unexplored. A good number of such destinations, such as Mughal Road, Daksum, Sinthoon Top, Gurez and

Lolab, have huge potential to emerge as tourist hot-spots.

### UNEXPLORED GEM

Last year, as the Valley witnessed, well-nigh, a snowless winter, many of these off-beat spots received a significant snowfall. It not only offered tourists an opportunity to visit these places but also underscored the need for their development and promotion.

“It has been one of the priorities of the government to develop lesser-known tourist destinations to attract more tourists,” said a tourism official. He said that in recent years, snow festivals and carnivals had been organised at many places to promote these hidden gems.

Notably, in 2023, the Jammu and Kashmir Tourism Department identified 75 offbeat destinations for promotion.

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RELEVANT PARTICULARS	
1. Name of the corporate debtor along with PAN & CIN/ LLP No.	LGCL Urban Homes (India) LLP. (Project United Towers) having PAN no. AAELF8034B and CIN No. AAB4374. The CIRP is restricted to the Project United Towers only.
2. Address of the registered office	No 121, Rest House Road NA Bangalore Karnataka 560001
3. URL of website	Not available
4. Details of place where majority of fixed assets are located	United Towers Project site is located at Sy. No. 20/4, Kadubeesanahalli Village, Varthur Hobli, Marathahalli Subdivision, Ward No.150, Mahadevapura Zone, Bengaluru.
5. Installed capacity of main products/services	Residential flats on a Land parcel of around 2924.89 Sq. Mt. Total Built up area- 9757.85 Sq. Mt. With Basement, Ground Floor, 7 Upper Floors and Terrace.
6. Quantity and value of main products/ services sold in last financial year	Nil. Project is stalled in 2020. Total Flats Proposed is 50 Flats (total saleable area: 81136 sq.ft.). Developer's share is 27 flats of 43,009 sq.ft. of which 11 flats (19,496 sq.ft) are yet to be sold.
7. Number of employees/ workmen	Nil
8. Further details including last available financial statements (if any) for the last two years, lists of creditors are available at URL.	Details are available with the Resolution Professional. Kindly contact <a href="mailto:cirp.lgclcd@gmail.com">cirp.lgclcd@gmail.com</a>
9. Eligibility for resolution applicants under section 25(2)(b) of the Code is available at:	Details are available with the Resolution Professional. Kindly contact <a href="mailto:cirp.lgclcd@gmail.com">cirp.lgclcd@gmail.com</a>
10. Last date for receipt of expression of interest	6.00 PM on 28/01/2025
11. Date of issue of provisional list of prospective resolution applicants	02/02/2025
12. Last date for submission of objections to provisional list	6.00 PM on 07/02/2025
13. Date of issue of final list of prospective resolution applicants	17/02/2025
14. Date of issue of information memorandum/ evaluation matrix and request for resolution plans to prospective resolution applicants	03/03/2025
15. Last date for submission of resolution plans	03/03/2025
16. Process email id to submit Expression of Interest	<a href="mailto:cirp.lgclcd@gmail.com">cirp.lgclcd@gmail.com</a>
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Dated: 13.01.2025 Place: Bengaluru	