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-Dr. B.R. Ambedkar

133rd BIRTHDAY CELEBRATION

Garlanding the Statue of
Architect of Indian Constitution, Great Humanitarian, Bharat Ratna
Dr. B.R. AMBEDKAR

April 14, 2024 Sunday at 10.00 AM
In front of Vidhana Soudha, Bengaluru



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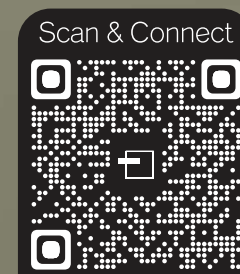
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ELECTIONS 2024

Quiet election campaign amidst much noise

While all the noise in the electoral arena is by the big parties and all the focus is on them, there are some players working quietly. The Socialist Unity Centre of India (Communist), which has fielded 151 candidates in 19 States in the Lok Sabha elections, has fielded

candidates in 19 constituencies across Karnataka. H.P. Shivaprakash, candidate for Bengaluru Central seat, was seen speaking to people on a range of issues from price rise to women's safety. In Bengaluru North, party candidate Nirmala H.L. was campaigning in T. Dasarahalli, Nandini Layout, and Mahalakshmi Layout. The party's auto campaign was inaugurated on Saturday at Gandhinagar Assembly constituency by Mr. Shivaprakash.



Nirmala H.L., SUCI (Communist) candidate, campaigning on Saturday. SPECIAL ARRANGEMENT

HDD should restrict his prophecies to JD(S): DKS

Deputy Chief Minister D.K. Shivakumar on Saturday asked former Prime Minister H.D. Deve Gowda to reserve his prophecies for the future of JD(S) rather than talk about the survival of the Congress government. Speaking to reporters at his residence in

Bengaluru, he said: "The Congress has 136-plus seats. Mr. Gowda will be better off predicting the future of the JD(S) than that of the Congress government." Mr. Shivakumar was responding to Mr. Gowda's statement that there was "no guarantee on Congress government continuing after the Lok Sabha polls." Mr. Shivakumar said: "Mr. Gowda has spent 60 years in political life while I have spent 40. We have 136+ seats. Let him not worry about our survival."



BASAVARAJ BOMMAI
Former Chief Minister and BJP candidate for Haveri LS seat

Moily criticises Centre for not conducting caste survey

Veteran Congress leader M. Veerappa Moily on Saturday criticised the Centre for not conducting a caste census in the country. The Congress has been demanding caste census to identify backwardness of people belonging to backward castes, SCs, and STs.



We welcome Mr. Modi, who is coming to Karnataka. But, let him tell us why no drought relief has been given to us till now.
SIDDARAMAIAH
Chief Minister



The manifesto stated that a deterrent Central law incorporating the amendments of Epidemic Diseases Act 1897, including all forms of violence against doctors and hospitals, should be brought in. FILE PHOTO

State unit of IMA brings out 'health manifesto' on gaps in system

Asserting that health ought to be treated as an important election issue, the State unit of Indian Medical Association (IMA) has come out with a "health manifesto" pointing out the gaps in the healthcare sector and the measures to be taken to bridge them to ensure equal healthcare for all.

IMA State president Srinivas S. told *The Hindu* that health of the nation deserves to be an important election issue and IMA is striving to streamline its concerns into a Health Manifesto. "IMA wants to work with the government to achieve affordable universal healthcare for everyone," he said.

Emphasis on 'purity', safety
Topping the list of priorities in the manifesto is a demand that the "purity" of modern medicine should be maintained. "Every system of medicine has its profile and history. Integrative medicine is a threat to patient care and safety. It is a health catastrophe waiting to happen. A cafeteria approach with the patients having the right to choose is the only acceptable solution," the manifesto maintained.

Pointing out that 23 State hospital protection laws have not brought solace to doctors against violence, the manifesto stated that a deterrent central law incorporating the amendments of Epidemic Diseases Act 1897, including all forms of violence against doctors and hospitals, should be brought in.

While demanding exemption for small and medium hospitals up to 50 beds and clinics from The Clinical Establishments (Registration and Regulation) Act, 2010, the manifesto has appealed to the parties to do away with GST on health as it is a taxation on illness. Also, criminal prosecution of doctors should be abolished as there is no criminal intent in any treatment procedure. The onus of protection of the girl child in the womb lies with the governments. The harassment meted out in the name of PC-PNDT Act should stop," the manifesto stated.

Universal healthcare
Demanding that universal healthcare should be an entitled provision in the basic health package of every citizen, the manifesto stated that the government should not only provide appropriate medical care but also address all the health determinants, including drinking water and sanitation.

"Despite numerous policy announcements prioritising health, the governments at the Centre and State levels have historically underfunded the public health sector, resulting in rising inequity in access to healthcare. The IMA demands that the minimum allocation for health, which at present varies from 1.1 to 1.6% of GDP, one of the lowest in the world, should be increased to 2.5%," the manifesto added.

Warning against AMR
Highlighting that Anti-Microbial Resistance (AMR) is an emerging threat in the fight against communicable diseases, the manifesto said it has to be tackled with urgency. "Responsible use of antibiotics is a fundamental and effective strategy in containing AMR," it stated. IMA demanded that one drug-one price norm be introduced. "GST of 5%-18% for drugs contribute to substantial portion of out-of-pocket expenditure," the manifesto said.

Congress demands assurance from Modi on granting clearances for water projects

Minister asks if the Prime Minister will promise voters on getting the nod for Mekedatu project during his rally in Mysuru and Mangaluru today

WATER ISSUE

The Hindu Bureau
BENGALURU

Ahead of Prime Minister Narendra Modi's visit to Karnataka on Sunday to campaign for the BJP-JD(S) candidates, the Congress has posed a bunch of questions to him related to denial of permissions and funds to irrigation projects, including Mekedatu, and sought answers from him.

Addressing reporters on Saturday, Minister for Revenue Krishna Byre Gowda said Karnataka has released an additional 1,000 tmcft of water to Tamil Nadu since 2018-19 owing to surplus rainfall in the State, but the Centre has denied permission to the State for construction of balancing reservoir Mekedatu across the river Cauvery for storage of 65 tmcft. The dam was proposed for construction of a hydel power project and cater to the drinking water needs of Bengaluru. The construction of the dam would enable it to store surplus water and help both States during the distress years, he said.

The State government has submitted several petitions seeking clearances from the Centre for the last five years. But the Modi-led government has denied permission and developed "an attitude of hate" towards Karnataka, he said.



The Cauvery flows through a gorge at Mekedatu, near Kanakapura, in Ramanagara district. K. MURALI KUMAR

The Supreme Court has observed that Karnataka can build any number of projects on the Cauvery basin as long as it adheres to the Cauvery Water Dispute Tribunal. The State has released 490 tmcft more water to Tamil Nadu in 2022-

23 against the tribunal's order of 177.25 tmcft, Mr. Byre Gowda pointed out. He asked: "Will the Prime Minister assure voters on providing clearances to the Mekedatu project during his rally in Mysuru and Mangaluru on Sunday?"

Upper Bhadra project
He said the Centre had not released ₹5,300 crore to the Upper Bhadra project promised in the Union Budget in 2023-24. The

Centre has not released a single rupee till now, he said.

The Centre issued a gazette notification on drawing 13.42 tmcft of water by Karnataka from the inter-State Mahadayi river. But the Centre had not provided clearances for implementing the Kalasa-Banduri nala project, he claimed.

Mr. Byre Gowda asked: "Will Mr. Modi assure voters of Karnataka granting funds and necessary per-

Will discuss Cauvery 'injustice' with PM after polls: Deve Gowda

The Hindu Bureau
HASSAN

Former Prime Minister H.D. Deve Gowda said that he will discuss and find a solution to the "injustice" caused to Karnataka in the Cauvery dispute with Prime Minister Narendra Modi after the Lok Sabha election results are out.

Addressing a gathering at Udayapura in Channarayana taluk on Saturday, Mr. Deve Gowda said that for over 200 years, people in Karnataka had been denied justice on the Cauvery issue. "The tribunal did not recognise the

need for drinking water for the people of Bengaluru. I will continue to fight against this injustice. There is no doubt Mr. Modi will be again elected to the Prime Minister's post on June 4. I will meet him and discuss the issue then," he said.

He further said: "We can raise a voice for justice only if all 10 Lok Sabha constituencies in the Cauvery basin elect the JD(S) and BJP candidates. I will campaign in Mysuru, Chamarajana, Mandya, Bengaluru, Kolar, and other places to ensure our candidates win."

mission to implement irrigation and drinking water projects?"

Issues of delimitation
Under the proposed delimitation of constituencies, the Centre has planned to reduce the number of Lok Sabha seats from five southern States from 129 to 103 and Tamil Nadu has al-

ready passed a resolution in the Legislature opposing the Centre's move, Mr. Byre Gowda said, and demanded clarification on the subject from the Prime Minister. Karnataka has also alleged that "injustice" has been meted out to the State by the Centre in the share of Central pool of taxes and drought relief.

HDK girds up his loins in the Cauvery heartland

R. Krishnakumar
MYSURU

Battle ground Mandya is poised for a fierce contest between the Congress and the JD(S) where caste arithmetic and the redrawn political equations following the pre-poll alliance of the JD(S) with the BJP will play out in the electoral arena.

Prime Minister Narendra Modi is visiting the Old Mysore region on Sunday and Congress leader Rahul Gandhi soon after on April 17, underlining the importance of the region where the constituency lies.

The stage is set for a direct contest between the arch rivals as the incumbent MP Sumalatha Ambareesh, who won as an Independent in 2019 with the indirect support of the BJP, has decided to stay away from polls after initial reluctance and formally joined the BJP. This has queered the election pitch in the Cauvery heartland whose outcome will have a bearing on the future of the JD(S).

For long, both the Congress and the JD(S) considered Mandya as their turf with the BJP rarely in picture. But in the 2023 Assembly polls, the Congress held sway by winning six of the eight seats under Mandya Parliamentary constituency which saw the consolidation of the votes of not only the dominant Vokkaliga community but also

Mandya Lok Sabha constituency

Key candidates

- H.D. Kumaraswamy - JD (S)
- Venkataramane Gowda - Cong.

Total number of voters: 17,79,239

Previous LS polls voting %: 80.56

Others: 168

History of the seat
In the 17 parliamentary polls and four parliamentary byelections in Mandya, Congress has won on 13 occasions

M.K. Shivalingappa of the Congress was elected for four consecutive terms from 1952. The Congress grip on Mandya was first broken by S.M. Krishna who was elected in a byelection from the Praja Socialist Party

The BJP has never won from Mandya

Sumalatha is the only woman and the only Independent to have been elected from the constituency so far wrested the seat from the Congress for the first time in 1991

Past results	Winner	Votes	Vote share	Runner-up	Votes	Vote share	Third place	Votes	Vote share	BJP+JD(S)	Votes-vote share
2019	Sumalatha (Independent)	7,03,660	51%	Nikhil K. JD (S)	5,77,784	41.88%	M.I. Shashi Kumar (Independent)	18,323	1.33%	12,81,444	92.88
2014	C.S. Puttaraju (JD-S)	5,24,370	43.95%	Ramya (Congress)	5,18,852	43.49%	B. Shivalingaiyah (BJP)	86,998	7.29%	6,11,363	51.24%

that of the Dalits and other backward classes, in its favour.

In the seat-sharing pact with JD(S), BJP has yielded Mandya, Kolar, and Hassan to its alliance partner, and JD(S) president H.D. Kumaraswamy has entered the fray from Mandya. The Congress has fielded Venkataramane Gowda or "Star Chandru", who is making his maiden foray into electoral politics.

The outcome of the polls will be significant because the stakes are high

for the JD(S) that is still struggling to recover lost ground after the rout of the 2023 Assembly elections. The party suffered its worst electoral debacle ever by winning only 19 seats across the State and only one out of eight seats from Mandya Parliamentary constituency, considered as its fortress.

The electoral verdict means more for the political future of the JD(S) as its marker as the first preferred party of the Vokkaligas and the farmers of

Mandya is being questioned, whereas the BJP has nothing to lose.

In a district where BJP was struggling to find a foothold, the Keregodu flag incident - where a flag with the image of Hanuman was replaced by the national tricolour - led to communal tension in January.

Though the JD(S) had ostensibly opposed the communal nature of the BJP's electoral politics for years, it closed ranks with its alliance partner on this issue, resulting in the conso-

CM, Dy. CM question PM on remark on Constitution

The Hindu Bureau
BENGALURU

Prime Minister Narendra Modi's statement that the Constitution would not be changed "even if Dr. B.R. Ambedkar sought it" sparked a reaction from Chief Minister Siddaramaiah and Deputy Chief Minister D.K. Shivakumar on Saturday.

The Chief Minister questioned as to why then no action had been taken against his own party MP Anantkumar Hegde, who had recently remarked that the party needs 400 seats in the next Lok Sabha to "change the Constitution." Speaking at Mysuru, he said, "BJP is never in favour of Constitution. Ideologues like V.D. Savarkar and M.S. Golwalkar had opposed the implementation of the Constitution."

Mr. Shivakumar said in Bengaluru: "I am not sure why the Prime Minister is talking about this issue now. Why did he not expel party leaders who raised the issue of changing the Constitution if the BJP got 400 seats? He is talking about this now as the SC, ST, and the downtrodden sections of society have expressed their concern over BJP's plan to change the Constitution."

IN BRIEF



Granules facility in Vizag completes U.S. FDA inspection

Drugmaker Granules India's Unit V manufacturing facility in Visakhapatnam has completed an U.S. Food and Drug Administration (FDA) inspection. It was a pre-approval inspection (PAI) and cGMP audit for APIs and formulations for oncology and non-oncology products. "Proud to reiterate that our focus on high-quality standards is comparable to the best global benchmarks as we receive zero observations from U.S. FDA audit," CMD Krishna Prasad Chigurupati said.

FII investments in real estate fell 55% in Jan.-March: Vestian

Institutional investments in real estate declined 55% annually in January-March this year to \$552 million as foreign investors stayed away, pumping in only \$11 mn, said global property consultant Vestian. The realty sector had attracted \$1,238.3 million (\$1.23 billion) in the January-March period of CY2023. The data showed that the institutional inflow from foreign funds plunged 99% to just \$11 million in Q1 of 2024 from \$791.4 million in the year earlier. PTI

All 224 Gurugram luxury flats sold out in 15 minutes: Ashiana

Realty firm Ashiana Housing on Saturday said it sold 224 luxury flats in Gurugram for ₹440 crore within 15 minutes of its launch. The project is located at Sector 93 in Gurugram, Haryana. The company said it has "sold out the entire phase 3 of its prestigious project, Ashiana Amarah within 15 minutes of launch". "We started registration at 11 am and we had received 800 cheques for 224 units by 11.15. In 15 minutes it was oversubscribed four times," Joint MD Ankur Gupta said.

EPAM bets big on India as more clients set up GCCs

N. Ravi Kumar
HYDERABAD

Digital transformation services and product engineering solutions provider EPAM Systems is upbeat on its India operations and its contributions as an increasing number of clients as well as leading firms choose to set up global capability centres (GCCs) and move their business functions to the country. "India is becoming more and more of a focused area for us to do business development too," President of EU and APAC Markets at EPAM Balazs Fejes said. "If business stakeholders no longer [are] in the U.S. or Western Europe, but in India [including] budget holders then



Balazs Fejes

you need to focus and try to sell to them going forward," he added. For the NYSE-listed company that reported \$4.69 billion in revenue for 2023, India is already its second-largest delivery centre globally. Describing the trend of GCCs and business functions being moved to India as a "very interesting change and [poised to]

change dynamics overall," Mr. Fejes, who was here recently, said India has already been important for EPAM from a talent availability perspective. EPAM employs more than 53,000 people globally.

EPAM India MD Srinivas Reddy, present during the interaction, said "our headcount in India is 7,300 engineers with half of them based out of Hyderabad" and the rest in Pune, Bengaluru, Gurgaon, and Chennai.

The plan was to increase the headcount in India to more than 10,000 by 2025, Mr. Fejes said, seeking to highlight how the company takes clients through their digital transformation process, from design to the actual creation of software.

Luxury home market is 'very hot' now, says Trump Org.'s India partner

Lalathendru Mishra
MUMBAI

The demand for luxury homes in India, which has seen substantial growth in the last three years, is expected to continue with prices in the segment set to rise further, said Kalpesh Mehta, founder, Tribeca Developers which is the largest developer of Trump-branded homes outside the U.S.

"Before COVID, everyone was moving into compact homes, not much of luxury products were launched. So, there was a supply-demand imbalance of luxury, which is why we are seeing luxury prices



Kalpesh Mehta

going up. And obviously, with the economy improving, the demand has increased," he said in an interview.

"As long as the equity markets continue to do well and the economy continues to do well, the demand for luxury homes

will stay strong. There is a fair amount of supply also being added into the market. So, I think the imbalance that we see should flatten out eventually," he added.

The growth factor

He said luxury always goes along with economic growth, more importantly stock market growth and wage growth. And there don't seem to be any major economic headwinds for the economy right now, he said adding in next two to four years, "we're not seeing any issues barring any global unforeseen events."

He said prices are going up because of the demand

Govt. to e-com firms: remove Bournvita as a 'health drink'

Meenakshi Verma
Ambwani
NEW DELHI

The Centre has directed e-commerce players to ensure that certain beverages such as Bournvita are not categorised as health drinks on their platforms.

The advisory from the Department for Promotion of Industry and Internal Trade (DPIIT) follows the Food Safety and Standards Authority clarifying that there are no standards for a "health drink". "All e-commerce companies/portals are... advised to remove" beverages including Bournvita from 'health drinks', DPIIT said.

(The writer is with The Hindu businessline)

Reuters
NEW DELHI

The government has directed companies to operate underutilised gas-based power plants in May and June, and extend operations of imported coal-based plants until October 15 to meet anticipated high demand for electricity, as per two government orders.

India registered an 8% rise in electricity consumption in the 12 months ended March 31, and demand is expected to rise in the hot summer months. In an order dated Fri-

day, the government for the first time invoked an emergency clause mandating companies to operate underutilised gas-based power plants by importing the fuel.

Idle capacity

India has about 24 gigawatts (GWs) of gas-based power plants that have been idling or underused for decades due to lack of fuel. Power stations would be informed two weeks in advance about the requirements so they could import gas, the government said in its order. "Gas-based power

Firms told to run gas units as power ask rises

Centre directs companies to operate underutilised gas-based power plants in May and June, and extend operations of imported coal-based plants until October 15 to meet the anticipated surge in electricity demand during summer months when IMD expects above-normal high temperatures

Girding for summer surge

India logged an 8% rise in electricity consumption in the year to March, and demand is seen rising this summer



India has about 24 GW of gas-based plants that have been idling or underused for decades

Power Ministry has projected 260 GW peak power demand this summer (April-June)

Torrent, NTPC are among the big gas-based power station operating companies

plants are required to meet the anticipated surge in power consumption in summer months," it said. The Power Ministry has projected 260 GW peak

power demand this summer (April to June). Peak power demand touched an all-time high of 243 GW in September last year. Torrent and NTPC are

among the big gas-based power station companies.

In another order, seen by Reuters on Saturday, the Centre invoked an emergency clause directing firms such as Tata Power and Adani Power - which operate imported coal-fired plants with a capacity of almost 16 GW - to continue operations.

As per the arrangement, GRID-INDIA will inform gas-based units in advance, of the number of days for which gas-based power is required. Gas-based units holding Power Purchase Agreements (PPAs) with distribution licensees shall

first offer their power to PPA holders.

If the power offered is not utilised by any PPA holder, then it shall be offered in the power market.

Units not tied to PPAs must offer their output in the power market. A high-level committee headed by Chairperson, Central Electricity Authority will facilitate the implementation of this direction.

The India Meteorological Department has predicted above-normal maximum temperatures over most parts of the country during summer. (With inputs from PTI)

U.S. consumer sentiment slips; inflation expectations increase

Reuters
WASHINGTON

U.S. consumer sentiment receded in April and households expected inflation to increase over the next 12 months and beyond, likely providing more ammunition for the Federal Reserve to delay cutting interest rates until September.

The survey from the University of Michigan on Friday followed data that showed consumer prices rose more than expected for a third straight month in March.

Stubbornly high inflation and a strong labour market prompted markets



Under control: inflation is not spiralling out of control, with producer prices increasing moderately last month. AFP

and most economists to sharply dial back expectations for the first rate cut from the U.S. central bank to September from June.

They also have lowered the number of anticipated rate cuts to two from three.

But inflation is not spiralling out of control, with

producer prices increasing moderately last month.

"This increase in inflation expectations is not what the Fed wants to see, but despite the increase, they remain in line with the recent trend and are well-anchored," said Eugenio Aleman, chief economist at Raymond James.

The University of Michigan's preliminary reading on the overall index of consumer sentiment came in at 77.9 this month, compared to a final reading of 79.4 in March.

The survey's reading of one-year inflation expectations increased to 3.1% in April, from 2.9% in March.

Will inform staff of new role between May and June: Vistara CEO

The Hindu Bureau
NEW DELHI

As Vistara moves closer to its merger with Air India, its CEO informed employees that the non-flying staff would be informed of their new role in the combined airline entity between May and June.

'Working on concerns'

"We have transitioned to a new contract for pilots and working on feedback and concerns that have been received around this," CEO Vinod Kannan said in an internal mail to employees on Saturday.

"Cabin crew have also reached out to me to get clarity on their contracts and whether there will be any changes implemented for them ahead of the merger," he added.

Mr. Kannan acknowledged "anxiety, stress and apprehension" among employees over their place in the merged airline, and assured that it remained committed to ensuring that all the staff had a relevant and suitable role in the merged organisation.

Vistara's merger with Air India is expected to conclude by mid-2025.

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CHAIRPERSON, JOINT ADMISSIONS COMMITTEE 2024
Email: askjac2024@iiserb.ac.in, Website: <https://www.iiseradmission.in>
Phone: 0755-2691798 (2 PM to 5 PM, Monday to Friday)



Concurrent heatwaves, sea level rises pose a threat to coastlines

The Hindu Bureau

Concurrent occurrences of heatwaves and extreme short-term sea level rise at the same coastal locations significantly increased between 1998 and 2017 when compared to the preceding twenty years, as per a study published in the journal *Communications Earth & Environment*.

The study also suggests that these events may be five times more likely to occur between 2025 and

2049 under a modelled high emissions scenario.

A so-called 'concurrent heatwave and extreme sea level' (CHWESL) event is when a heatwave and an extreme short-term sea level rise occur at the same coastal location over the same time period.

This can pose a serious threat to coastal communities. Yet, there has so far been little research into the characteristics and occurrences of these events.

Shuo Wang and Mo

Zhou from the Hong Kong Polytechnic University, Hong Kong, investigated CHWESL events worldwide between 1979 and 2017 and projected future events between 2025 and 2049 under a high emissions climate scenario (the IPCC's SSP5-8.5 scenario). The authors only included events occurring in the extended summer season, spanning May to September in the Northern Hemisphere, and November to March in the Southern

Hemisphere. The authors found that approximately 88% of the world's coastlines experienced a CHWESL event during the period 1979-2017. Approximately 39% of coastlines recorded a significant increase in the total duration of CHWESL conditions experienced over a year during the period 1998-2017 compared to during 1979-1998, with tropical regions more likely to experience a greater increase.

The authors also found

a significant association between heatwave intensity and the probability of a CHWESL event occurring, with a 1% increase in heatwave intensity associated with an approximately 2% increase in the probability of a CHWESL event occurring. From their projections, the authors suggest that global coastal areas could experience on average 38 days of CHWESL conditions each year between 2025 and 2049, an increase of 31 days compared

to the historical period of 1989-2013.

The authors conclude that CHWESL events could pose a significant threat to coastal communities, particularly from the risks of excess heat to human health.

They note that countries in tropical areas are likely to be the most severely affected, and that many of these countries are low or middle-income countries which may struggle to cope with the effects.

SNAPSHOTS



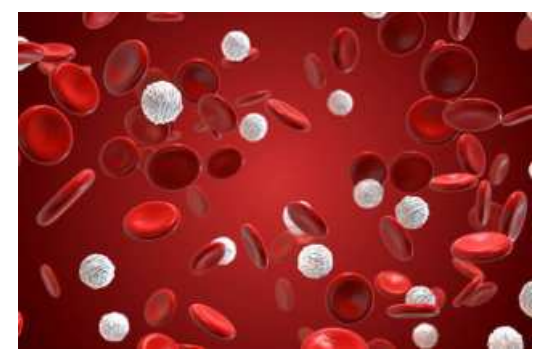
Thin oil films enable water mixtures sans surfactant

Thin oil films adsorbed onto the surface of water droplets lead to anomalously stable, surfactant-free oil and water mixtures, according to a new study. The findings demonstrate a mechanism for stabilizing water droplets in a water-oil emulsification without the need for a surfactant. It could have important technological applications, including the creation of very pure and controlled materials. Oil and water cannot form homogenous mixtures. Instead, when combined, an emulsion is formed.



Patient's skin microbiome may cause surgical infections

Many surgical infections may originate from the patient's own skin microbiome rather than from environmental contamination, as per a new analysis of 204 recipients of spinal surgeries. A genomic comparison revealed that 86% of surgical infections, involving a range of bacterial species, originated from bacterial strains that were already in the microbiome before surgery. Also, 59% of the isolates studied resisted the preventative antibiotics given before surgery, hinting that such bacteria were already present.



Particles that mimic platelets staunch traumatic bleeding

Scientists have designed artificial, ultra-soft particles that can mimic the blood-clotting properties of platelets to staunch heavy bleeding from trauma in rodents and pigs. Their platelet-like particles offer advantages over traditional platelet infusions that could make them more viable outside of the hospital, such as a longer shelf life and lower risk of contamination. The new platelet-like particles are based on a highly deformable microgel.

Blood bank study reveals true incidence of Long COVID

The study looked for the presence of anti-nucleocapsid (anti-N) antibodies, which indicates past natural infection. COVID-19 vaccines do not elicit the antibody, thus distinguishing natural infection from COVID-19 vaccination

Rajeev Jayadevan

The pandemic has claimed over seven million lives officially, but the actual death toll is believed to be much higher. Among COVID-19 survivors, a significant number develop long-term health problems. The World Health Organization uses the term Long COVID for individuals experiencing such symptoms for over three months without another explanation.

Unfortunately, measuring chronic illness and disability resulting from COVID-19 has been challenging due to various factors. While binary outcomes like deaths and ICU admissions are easily counted, tracking slow-onset health issues is more difficult. This is further complicated by the fact that new health problems can arise even without SARS-CoV-2 infection. Consequently, studies utilising different methodologies have reported a wide range of Long COVID incidence rates. A recent study in *JAMA Network Open* has aimed to address this issue by comparing people who had COVID-19 with those who did not.

The researchers utilised the U.S. blood donor data from 2,38,828 individuals, leveraging antibody test results from the pre-Omicron era to identify individuals who had COVID-19. Specifically, they looked for the presence of anti-nucleocapsid (anti-N) antibodies, which indicates past natural infection. The advan-

21.2% incidence of Long COVID

Blood donor data of 2,38,828 people in the U.S. prior to the first Omicron wave were studied

- Anti-nucleocapsid (anti-N) antibodies are present in people who have been naturally infected with SARS-CoV-2 virus

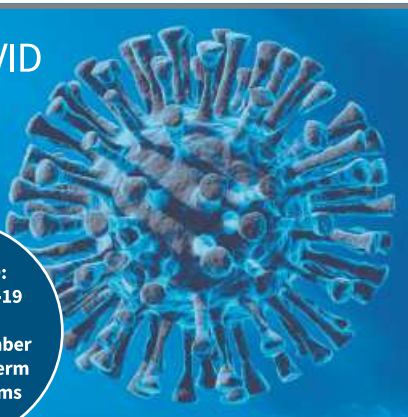
- Participants who tested positive for the anti-N antibody were categorised as naturally infected, while those who did not formed the control group

- A diagnosis of COVID-19 by a healthcare professional or a positive COVID-19 test were also accepted as evidence of infection

- 43.3% of individuals with confirmed SARS-CoV-2 infection experienced Long COVID, compared with 22.1% without a history of SARS-CoV-2 infection

- The study, however, did not measure antibodies at subsequent time points, potentially missing individuals who were

LONG COVID: Among COVID-19 survivors, a significant number develop long-term health problems



infected after blood donation

- Among those who were infected with SARS-CoV-2, 84.5% were still experiencing symptoms, while the symptoms had resolved in the remaining 15.5%

- Neurological symptoms were reported by 23.6%, while 23.1% experienced problems such as changes in taste or smell, and 15.8% had cardiac or respiratory symptoms

tage is that it also identifies people who had asymptomatic infection and those who were infected but did not get tested. The two COVID-19 vaccines used in the U.S. do not elicit the anti-N antibody, thus distinguishing natural infection from COVID-19 vaccination.

Participants were categorised into those who tested positive for the anti-N antibody and those who did not. A diagnosis of COVID-19 by a healthcare professional or a positive COVID-19 test was also accepted as evidence of infection. Essentially, the researchers were able to distinguish individuals who genuinely had COVID-19 from those who did not, using robust parameters. This differs from other studies that may have relied on self-reported COVID-19 diagnoses, which tend to be less reliable. The

researchers discovered that 43.3% of individuals with confirmed SARS-CoV-2 infections experienced new symptoms lasting four weeks or longer, after recovering from COVID. Among those without infection, 22.1% reported new-onset symptoms, as might be expected in the general population. This indicated that 21.2%, or the difference between 43.3% and 22.1%, had long-term health problems genuinely resulting from SARS-CoV-2 infection. Among them, 84.5% were still experiencing symptoms, while 15.5% said that their symptoms had resolved.

Neurological symptoms were reported by 23.6%, while 23.1% experienced other problems such as changes in taste or smell, and 15.8% had cardiac or respiratory symptoms. The two most common indivi-

dual long-term symptoms were difficulty thinking or concentrating (12.7%) and fatigue (11.1%). Surprisingly, the picture of mental health was different. Among those without infection, as many as 9.8% developed mental health problems such as anxiety and depression. The incidence was only slightly higher at 11.9% among those with prior infection. This is attributed to loneliness, fear of infection or death of oneself or loved ones, bereavement and financial worries that affect people regardless of their infection status. The WHO noted a 25% increase in anxiety and depression in 2022 due to these factors. Therefore, a key takeaway is that a pandemic impacts the mental well-being of the entire population - not just those who got COVID.

Among those who had a

Geroscience: the science related to aging



SPEAKING OF SCIENCE

D. Balasubramanian

Dr. Daniel Belsky, an epidemiologist at Columbia University, New York (my Alma Mater), has coined the term 'geroscience', meaning geriatric, or related to age. Here, he has devised a novel blood test which determines the pace at which a person is aging. His group has devised a method which studies the formation of methyl groups through an enzyme in the DNA of senior citizens and finds that this methylation is sensitive to aging. This is often referred to as 'gerozyme'.

Tool to target aging
Several groups are working on drugs and other related methods to modulate the

gerozyme, and how these efforts affect his/her aging. One group has suggested the drug called metformin is a tool to target aging (*Cell Metabolism*, vol.23, June 14, 2016). Another group has shown that if we inhibit the enzyme TORC1, it will enhance immunity and reduce infection in the elderly. More recently, Mannick et al, in a paper in *Nature Aging* (2023) have reviewed the effects of the drug rapamycin on the longevity and survival of animal models of human diseases, and how we may make the drug's inhibitors a part of the standard of care for diseases of aging.

Dr. Belsky's group had also studied the levels of DNA methylation in people across the socio-economic backgrounds (poor, rural-urban) and found that the socio-economic disadvantage has a role to play.

The Columbia Aging



Various benefits: Senior citizens will benefit from exercise and thus inhibit the aging-associated enzyme (gerozyme). GETTY IMAGES

Centre has found that a balanced diet supports brain health by reducing inflammation, and promotes proper blood flow by supplying essential nutrients which aid cognitive function.

The website healthline.com elaborates on this and states that healthy

sources of proteins, healthy fats, and foods rich in antioxidants, such as healthy fats, vegetables, foods rich in oils, and plenty of fruits help in supporting healthy aging. This is of particular value to us in India, since the number of people above the age of 60 years is about 10 crores

(out of a total population of 143 crores). Healthline.com suggests that proteins (animal and vegetable), nutritive grains (wheat, rice, ragi, bajra), oils, fruits and soft drinks help in healthy aging. These are easily available, both for meat eaters and vegetarians.

Researchers at Stanford University have found that a drug which can boost strength in injured or aging mice restores connections between nerves and muscle fibres. This drug blocks the activity of an aging-associated gerozyme called 15-PGDH which naturally increases in muscles with age and in neuromuscular disease. But with this drug, aging mice become physically active again.

Mayo Clinic in Minnesota offers seven benefits of regular physical activity. These are: controls weight; combats health conditions and diseases like stroke, high blood pressure, type

2, diabetes, and cancer; improves your mood; boosts energy; enables better sleep; better sex life; and finally, it can be fun and social such as meeting, walking, or playing with others.

All of us, particularly senior citizens, will greatly benefit by exercise, and thus inhibit the gerozyme.

Music may even modulate gerozyme and be a cure for dementia!

In 2020, a group from Toledo, Spain published a paper which concluded that music can be a powerful treatment strategy for dementia. And more recently, another group, again from Spain, has a paper titled: Music compensates for altered gene expression in age-related cognitive disorders. In effect, the paper suggests that music can modulate our gerozyme. So, friends! Sing a song or turn the music on!



Question Corner

Evolution of eyes

Is there any evidence that eyes have evolved several times independently of one another?

Scientists have discovered a bristle worm with such sharp-seeing eyes that they can measure up to those of mammals and octopuses. The Vanadis bristle worm, also known as polychaetes which are nocturnal, has eyes as big as millstones, relatively speaking. As a set, the worm's eyes weigh about twenty times as much as the rest of the animal's head. Its eyesight is on a par with that of mice or rats, despite being a relatively simple organism with a minuscule brain. These worms see

ultraviolet light. This may indicate that the purpose of its eyes is to see bioluminescent signals in the otherwise pitch-black nighttime sea. Vanadis' eyes are built simply, but equipped with advanced functionality. They have evolved in a relatively short evolutionary time span of just a few million years. This means that they must have developed independently of, for example, human eyes and that the development of vision, even with a high level of function, is possible in a relatively short time.

Readers may send their questions / answers to questioncorner@thehindu.co.in

How did the law on disclosure of assets evolve?

What is the Supreme Court ruling? What principle emerges from it? What is the penalty for omission of assets?

K. Venkataramanan

The story so far:

Two recent developments have brought under focus the disclosure norms that candidates are expected to comply with in election law. One relates to reports that the BJP candidate in the Thiruvananthapuram Lok Sabha constituency, Rajeev Chandrasekhar, had allegedly failed to report all the assets he owns in the mandatory affidavit accompanying his nomination papers. Another report was about the Supreme Court noting that not every little detail needs to be disclosed, as candidates also have their right to privacy.

What is the law related to disclosure?

The requirement that prospective candidates will have to disclose their criminal antecedents, if any, their educational qualifications and their assets and liabilities, including those of their spouses and dependants, arose from a landmark Supreme Court judgment on May 2, 2002. The court ruled that the voters' right to information in a democracy is part of the citizens' right to express their opinion through their vote.

In June 2022, the ECI issued the rules to give effect to the judgment. However, the Central government of the day sought to curtail the scope of these disclosures by an ordinance amending the Representation of the People Act, 1951, in August 2002. Later, it was replaced by an

Act. The amendments introduced Sections 33A (concerning disclosure of pending criminal cases), Section 33B (which effectively nullified the ECI's notification by saying no disclosure other than those prescribed in the Act is required) and Section 125A (penalty for failure to disclose or false disclosure). The Ordinance and, thereafter, the amending Act were challenged in court. The Supreme Court on March 13, 2003, struck down Section 33B and restored the disclosure requirements regarding assets and liabilities and educational qualifications. The ECI issued revised instructions and the format for disclosure based on the judgment.

Rejecting the contention that the voter's right to know all particulars is absolute, the Supreme Court said there was no need for a candidate to lay bare his entire life for the electorate to examine

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What are the consequences of any omission?

Section 125A of the RPA, 1951, prescribes a six-month prison term, or a fine, or both, for any candidate's failure to disclose the required information, or giving false information or concealing such information.

Besides this provision for prosecution, any omission or false information could be a ground to challenge a candidate's election in the High Court. Among the grounds available to a court to invalidate an election, two are relevant here. Under Section 100, an election can be declared void if there is "improper acceptance of any nomination" or "any non-compliance with the provisions of the Constitution or of this Act or of any rules or orders made under this Act." It is possible for an unsuccessful candidate to question the acceptance of the nomination of the ultimate winner on the ground of concealment or furnishing of false information, as well as raise the possible violation of any of the statutory disclosure requirements.

What is the latest court ruling?

This case concerned the election of Karikho Kri, an independent candidate who won a seat in the Arunachal Pradesh Assembly in 2019. His election was challenged by the Congress candidate Nuney Tayang on the ground that Mr. Kri had not disclosed some moveable assets in the names of his wife and children. The Itanagar Bench of the High Court of Assam, Nagaland, Mizoram and Arunachal Pradesh accepted the allegations and declared Mr. Kri's election void. It found that his nomination had been improperly accepted as he had failed to disclose three vehicles (sold some years before, but not yet registered in the name of the buyers) and had not submitted a 'No Dues' certificate for government accommodation he had enjoyed during an earlier stint as MLA (2009-14).

The Supreme Court set aside the High Court's judgment on the ground that the non-disclosure was not of a substantial nature warranting rejection of his nomination; nor did it amount to non-compliance with the law as it did not materially affect the outcome of the election.

What is the takeaway from the verdict?

Rejecting the contention that the voter's right to know all particulars is absolute, the Supreme Court said there was no need for a candidate to lay bare his entire life to the electorate. It is not necessary to declare every item of moveable property, unless it is of such value as to be sizeable in itself, or will reflect upon his lifestyle and thus be of interest to the voter. However, the court cautioned that there cannot be a straitjacket rule on this, and what omission is of a substantial character or will affect the outcome will depend on the facts of each case.

Why is there a WHO alert on viral hepatitis?

What are the findings in the Global Hepatitis Report 2024? Why does India have such a high disease load of hepatitis B and C? Is the increasing prevalence of non-viral forms of the disease, like alcoholic liver disease and non-alcoholic fatty liver disease, adding to the burden?

Bindu Shajan Perappadan

The story so far:

India accounted for 11.6% of the total viral hepatitis disease burden globally in 2022, making it the country with the second highest disease load after China, according to the World Health Organization's (WHO) Global Hepatitis Report 2024 released recently. Bangladesh, China, Ethiopia, India, Indonesia, Nigeria, Pakistan, the Philippines, the Russian Federation and Vietnam, collectively shoulder nearly two-thirds of the global burden of hepatitis B and C.

What does the report highlight?

As per the report, the disease is the second leading infectious cause of death globally – with 1.3 million deaths per year, the same as tuberculosis, a top infectious killer. New data from 187 countries show that the estimated number of deaths from viral hepatitis increased from 1.1 million in 2019 to 1.3 million in 2022. Of these, 83% were caused by hepatitis B, and 17% by hepatitis C. Every day, there are 3,500 people dying globally due to hepatitis B and C infections. Half the burden of chronic hepatitis B and C infections is among people aged 30-54 years old, with 12% among children under 18 years of age. Men account for 58% of all cases.

What is hepatitis?

"Hepatitis is an inflammation of the liver that is caused by a variety of infectious viruses and non-infectious agents leading to a range of health problems, some of which can be fatal," says Sharad Malhotra, HOD, Gastroenterology Hepatology and Therapeutic Endoscopy, Aakash Healthcare, Delhi. There are five main strains of

Hepatitis B can be prevented through vaccination, and the report highlights the need to ensure coverage; hepatitis C is curable with medicines

the hepatitis virus, referred to as types A, B, C, D and E. While they all cause liver disease, they differ in important ways including modes of transmission, severity of the illness and geographical distribution. In particular, types B and C lead to chronic disease and together are the most common cause of liver cirrhosis, liver cancer and viral hepatitis-related deaths. An estimated 354 million people worldwide live with hepatitis B or C, and for most, treatment remains beyond reach, according to the WHO.

Why is India vulnerable?

Doctors attribute the large number of cases to several reasons including high population density, lack of awareness to symptoms, screening and treatment and not adhering to or having access to good hygiene practices.

Dr. Sudeep Khanna, senior consultant, gastroenterologist, Indraprastha Apollo Hospitals, explained that one of the major reasons for the increasing burden of hepatitis in India is the high prevalence of chronic viral hepatitis B and C infections. "These chronic infections often remain asymptomatic for decades; furthermore, the lack of widespread screening programmes and limited awareness about the importance of hepatitis testing contribute to a significant proportion of cases going undiagnosed. Undiagnosed cases continue to transmit the infection, perpetuating the cycle of transmission and leading to a rise in the overall burden of the disease," he said. The physician added that another important factor contributing to the rising number of hepatitis cases is the increasing prevalence of non-viral forms of the disease, such as alcoholic liver disease (ALD) and non-alcoholic fatty liver disease (NAFLD). Doctors note that the high consumption of alcohol, particularly in urban areas, has led to a significant increase in ALD cases. Additionally, the rapid rise in obesity and metabolic disorders, coupled with sedentary lifestyles and dietary changes, has fuelled an epidemic of NAFLD in both urban and rural populations. These conditions can progress to more severe forms of liver disease further compounding the burden of hepatitis in India.

Men report larger number of cases. Manoj Gupta, HOD, Liver Transplant and GI Surgery, PSRI Hospital, Delhi, states that this is due to high-risk behaviour like use of IV drugs, sharing injections while using IV drugs and sexual behaviour. "Multiple sex partners, or male to male sex is a very high-risk factor for these hepatitis B and C infections," he said.

How can it be prevented?

Hepatitis B can be prevented through

vaccination and the report highlights the need to ensure coverage, while hepatitis C is curable with medicines. In India, the numbers of deaths due to viral hepatitis aren't comparable to tuberculosis, say experts, adding that cost of treatment is also among the lowest as India makes the generic version of the drugs. Also, the government's viral hepatitis control programme offers the vaccine to high-risk adults such as healthcare workers. Treatment for both hepatitis B and C is available under the programme. With an initial rollout of the hepatitis B vaccine in certain cities and districts of India in 2002-2003, the Indian Government included Chronic Hepatitis B infection (HBV) vaccine in the childhood immunisation programme in 2011-12.

Why is the report significant?

This is the first consolidated WHO report on the viral hepatitis epidemiology, service coverage and product access, with data for action. This report presents the latest estimates on the disease burden and the coverage of essential viral hepatitis services from 187 countries across the world. It also found that across all regions, only 13% of people living with chronic hepatitis B infection had been diagnosed, and approximately 3% (7 million) had received antiviral therapy at the end of 2022. Regarding hepatitis C, 36% of people had been diagnosed and 20% (12.5 million) had received curative treatment. These results fall well below the global targets to treat 80% of people living with chronic hepatitis B and hepatitis C by 2030. However, it does indicate slight but consistent improvement in diagnosis and treatment coverage since the reported estimates in 2019.

What is the way forward?

Mother to child transmission is responsible for most new infections, and in India, elimination of hepatitis B requires extensive treatment coverage, immunising and protecting every newborn and ending any discrimination against patients, said Dr. S.K. Sarin, Vice-Chancellor, Institute of Liver and Biliary Sciences, Delhi. The report cautions that despite the availability of affordable generic viral hepatitis medicines, many countries fail to procure them at lower prices. Pricing disparities persist both across and within WHO regions, with many countries paying above global benchmarks.

The report adds that service delivery remains centralised and vertical, and many affected populations still face out-of-pocket expenses for viral hepatitis services. It has outlined a series of actions to advance a public health approach to viral hepatitis, designed to accelerate progress towards ending the epidemic by 2030. This must look at expanding access to testing and diagnostics, shifting to policies for equitable treatment, strengthening prevention efforts and improved funding both at a global level or within countries' health budgets, said WHO.



Need for awareness: Pregnant women waiting for the Hepatitis B surface antigen screening test in Chennai in 2021. FILE PHOTO

The trend in climate change jurisprudence

What is the backdrop to the Supreme Court ruling that citizens have a right against the adverse effects of climate change? Why has a link been drawn between climate change and human rights? Is this happening in litigation in other countries too?

Jacob Koshy

The story so far:

In a recent judgment, the Supreme Court ruled that citizens have a "right against the adverse effects of climate change." The Court was giving its verdict in a case that raised concerns over multiple deaths of the Great Indian Bustard due to solar power transmission lines against India's obligation to meet its emission reduction and increase its energy capacity through non-fossil fuel sources.

What is the context?

In recent years, one of the factors linked to the decline in the population of the Great Indian Bustard, an endangered species, are power lines in Rajasthan and Gujarat, which host several, large solar parks. The concern was that the birds collided against the overhead transmission lines. Environmentalists petitioned the Supreme Court in 2019, pleading that all overhead lines, existing and prospective, be shifted underground. Private and public power companies, supported by the Centre's Ministry of New and Renewable Energy (MNRE), contended that shifting all overhead lines underground would be expensive and impractical, and would significantly hike the cost of solar power, undermining India's

Supreme Court judgments on environmental matters have often significantly altered public discourse and governmental action

commitment to green growth. The Court had constituted a committee of experts in April 2021 to determine which transmission lines ought to go underground and which ones could remain overground. In its latest judgment, the Court has continued to task an expert committee with overseeing the electrification but quite emphatically stressed that underground electrification – as the government and power-developers have argued – would hinder India's road to solar electrification.

What does the judgment say on human rights and climate change?

The Court notes that the Indian government has taken multiple steps through legislation as well mission-led programmes to address climate change. The Wild Life (Protection) Act 1972, the Water (Prevention and Control of Pollution) Act 1974, the Air (Prevention and Control of Pollution) Act 1981, the Environment (Protection) Act 1986, the National Green Tribunal Act 2010, were among those referenced in the judgment; the National Solar Mission, the National Mission for Enhanced Energy Efficiency and, the National Mission for a Green India were also mentioned. "Despite governmental policy and rules and regulations recognising the adverse effects of climate change and seeking to combat it, there is no single or umbrella legislation in India which relates to climate change and the attendant concerns. However, this does not mean that the people of India do not have a right against the adverse effects of climate change," the Court noted.

Despite constitutional guarantees that give citizens equality before the law and right to life and personal liberty, it was now necessary, in the Court's view, to explicitly link the impact of climate change as something which impedes these rights of liberty, life and equality. "This is perhaps because this right (against climate change) and the right to a clean environment are two sides of the same coin. As the havoc caused by climate change increases year by year, it becomes necessary to articulate this as a distinct right. It is recognised by Articles 14 and 21," the judgment notes. The Court also said that if vulnerable communities were affected, say by

coastal erosion, land degradation, or if people were made additionally vulnerable to disease, agricultural losses, storms and flooding – all indirectly linked to climate change – then rights under these Articles (14 and 21) would be violated, further necessitating an explicit link between climate change and rights.

Are their international precedents?

The link between climate change and human rights has grown stronger since the Paris Agreement of 2015. The preamble of the Agreement had references to "human rights." In a 2023 research paper, Doreen Lustig and Ilil Gabison of Tel Aviv University highlighted that there was a growing convergence between the fields of international human rights law (IHRL) and climate change. Several reports of UN human rights bodies and Human Rights Council resolutions are now drawing a link between rights and climate change. In 2005, Sheila Watt-Cloutier, a Canadian-Inuk activist, in her capacity as chair of the Inuit Circumpolar Conference (now known as the Inuit Circumpolar Council), petitioned the Inter-American Commission on Human Rights (IACHR) to get relief for human rights violations resulting from the impacts of climate change. This was among the first explicit links translating the impact of the climate crisis into human rights language. Scholars also argue that the framing of climate change as affecting future generations and endangering their right to a liveable planet follows from the link to human rights. "That is how the climate activism, for instance, of Greta Thunberg and her 'school strikes for climate', must be understood.

What are the implications of such a ruling?

Supreme Court judgments on environmental matters have often significantly altered public discourse and governmental action. For instance, decisions in the *M.C. Mehta versus Union of India*, the *Godavarma Thirumulpad* cases have been the foundation of subsequent environmental action. In the current case of the Great Indian Bustard too, the ruling has come with the Court underlining the necessity for expanding electricity production for solar energy sources. While this is state-backed, India has also underlined its right at international fora to continue to rely on coal plants and fossil fuels. Whether this will be seen by Indians as the government failing to protect them against the effects of climate change remains to be seen.



For the future: Greta Thunberg with a sign that reads, "School Strike for climate", outside the Swedish Parliament in Sweden on June 9, 2023. REUTERS



To the rescue: Two men deliver food on boats in a flooded area in Orenburg, Russia on April 11. The Ural river had burst through embankment dams. AP



Quick shift: The settlement of Zarechny in northern Kazakhstan, from where thousands of people were evacuated after floods on April 10. AFP



Danger zone: A firefighter walks by train tracks near a paper factory affected by a forest fire in Veracruz, Mexico on March 26. GETTY IMAGES

Uncertain times

Global monitors have warned that 2024 is shaping up to be the hottest year on record, marked by climate extremes; the vulnerable population is the most affected

In a world where global warming and climate change have become buzzwords, everything seems to be in a flux. There's either a deluge or a drought. Disasters like forest fires and floods seem to be increasing in frequency, pushing vulnerable people to the edge.

This month, extensive flooding impacted the Central Asian regions of Kazakhstan and Russia, specifically in the Ural Mountains and Siberia. The Ural river, which rises in the Ural mountains and flows through Kazakhstan into the Caspian Sea, burst through embankment dams in the Ural city of Orsk on April 5 and flooded parts of the city of Orenburg.

At least 12,000 people in Russia are recorded as having been evacuated. In Kazakhstan, more than 97,000 people have been evacuated. The worst hit areas mostly border Russia and are crossed by rivers flowing from or to Russia.

In a 2009 research commissioned by the U.S. National Intelligence Council on the impact of climate change on Russia to 2030, the authors said the rise in temperatures would lead to a series of complex issues for Russia.

Among them were the increased frequency of extreme climatic events including heavy rain, fires in Siberian peatlands and more frequent flooding of Russia's Arctic rivers due to heavy rain and earlier break-up of river ice.

The European Union's climate change

monitoring service recently said that March 2024 was the warmest on record. Each of the last 10 months ranked as the world's hottest on record, compared with the corresponding month in previous years, the EU's Copernicus Climate Change Service (C3S) said in a monthly bulletin. The 12 months ending with March also ranked as the planet's hottest ever recorded 12-month period, C3S said.

Extreme weather and exceptional temperatures have wreaked havoc this year. Wildfires affecting Mexico have destroyed over 3,000 hectares of forested areas. Heatwaves in Vietnam have caused severe drought in central Ninh Thuan province, badly affecting vegetation and livestock.

Closer home, the India Meteorological Department has said the country will see more than the average number of heatwave days this year between April and June. Heat waves can be lethal as they affect the ability to breathe, making the old and young particularly vulnerable.

Benjamin Horton, director of the Earth Observatory of Singapore where natural phenomena such as climate change are studied, said three factors determine heat waves; El Nino, a natural, temporary and occasional warming of part of the Pacific, an increase in global temperatures and human-induced climate change.

Text: Agencies



Land at risk: A farmer walks along a field abandoned due to saline intrusion after a drought in Vietnam's southern Ben Tre province on March 19. AFP



Drop by drop: A woman collects water from a storage tanker outside her home in Haripura village in Rajasthan on March 31. India, too, is experiencing heatwaves. GETTY IMAGES



Greenery lost: Trees affected by a forest fire in an avocado plantation in Cerro del Aguila, recognised as a protected area in Mexico on March 26. AFP



To safety: People wait to cross a flooded area in Spin Boldak district of Kandahar province in Afghanistan on April 13 after a flash flood. AFP



Seeking high ground: Rescuers from the Russian Emergencies Ministry evacuate people from a flooded residential area in Orenburg on April 11. REUTERS



Neck deep: A residential area flooded in Orenburg. REUTERS



A wet world: Residents ride boats in a flooded street in Orenburg. AP