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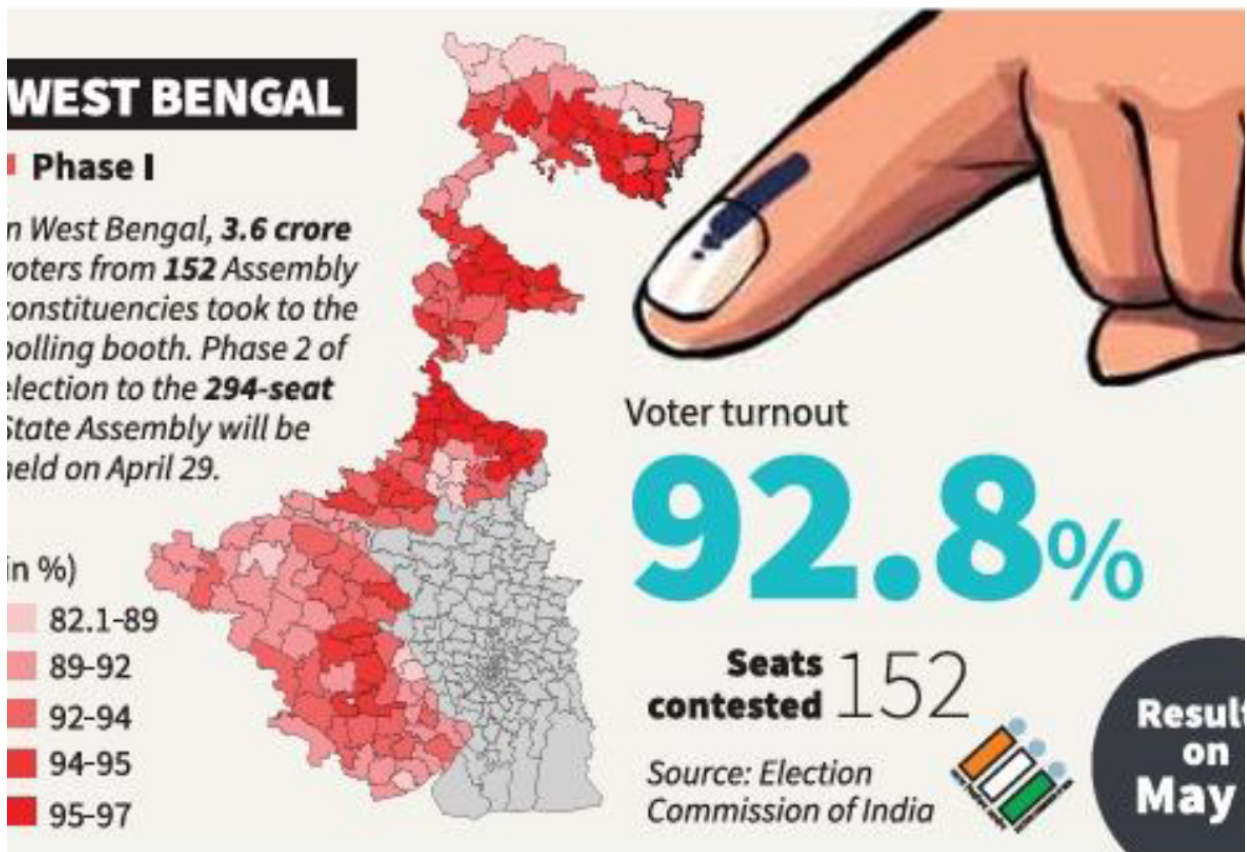
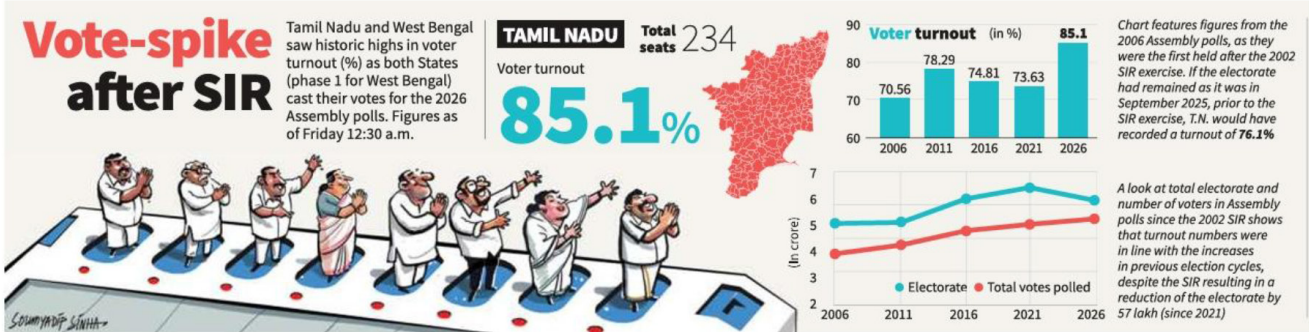
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GS 2: INTERNATIONAL RELATIONS

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'Indian ties with Africa signal stability in a turbulent world'

Jaishankar highlights that India-Africa partnership is rooted in shared anti-colonial history and strengthened through capacity building, development cooperation, and strategic engagement

Kallol Bhattacharjee
NEW DELHI

India's relationship with Africa delivers a message of "stability in a turbulent world". External Affairs Minister S. Jaishankar said on Thursday. Speaking at the launch of the theme, website and logo of the upcoming fourth India-Africa Forum Summit (IAFS-IV), Mr. Jaishankar said India's ties with Africa were rooted in the common struggle for freedom from colonial rule. He highlighted development partnership and capacity building as key areas of collaboration between the two sides.

"As the world navigates through complex geopolitical and geoeconomic challenges, our partnership assumes particular significance. It will be a message of stability in a turbulent world, of reliability in an uncertain one and of solidarity in difficult times," Mr. Jaishankar said, presenting the India-Africa partnership as a process that will strengthen institutions and empower peo-



External Affairs Minister S. Jaishankar with African Ambassadors and delegates at the India-Africa Forum Summit in New Delhi. ANI

ple. The Minister made the remarks while launching the theme, logo and website of IAFS-IV, to be held from May 28 to 31. The event was attended by New Delhi-based heads of missions and Ambassadors of African countries. The third edition of the India-Africa Forum Summit was held in October 2015. The theme of the upcoming summit is "Enduring partnership – shared vision".

Mr. Jaishankar's remarks obliquely referred to the situation in the Gulf region, which has come into focus over the past two

months due to the U.S.-Israel war on Iran that has triggered a global energy crisis. In view of disruptions in the supply of essential items such as petroleum, natural gas, and fertilizers, India is looking for stable alternative suppliers, with several African countries seen as potential partners. With disruptions in fertilizer supplies from Gulf countries such as Qatar, Saudi Arabia, and Bahrain, India is expected to focus on Algeria, Tunisia, Libya, and Morocco to meet demand ahead of the next monsoon season.

Mr. Jaishankar highlighted India's long-term commitment, noting that the opening of 17 new diplomatic missions in Africa has taken the total to 46. With this, India's diplomatic footprint is now visible in "every region of the continent", he said.

'Living bridge'

He also referred to the three million-strong Indian diaspora in Africa as a "living bridge" connecting the two regions. He cited institutions such as the IIT, Zanzibar, the National Forensic Science University in Uganda, the Entrepreneurship Development Centre in Rwanda, and Centres of Information Technology in several African countries as examples of "people-centric cooperation".

Mr. Jaishankar said that outside the South Asian neighbourhood, Africa is the largest recipient of Indian overseas development support. "India has placed development cooperation and capacity-building programmes at the core of its partnership with Africa," he said.

GS 1: INDIAN SOCIETY

THE HINDU PAGE : 14

State support key for tribal welfare, says Social Justice Ministry report

Abhinay Lakshman

NEW DELHI

Support from State governments has been lacking in efforts to extend welfare measures to denotified, nomadic, and semi-nomadic tribes (DNTs), the Union government has said, adding that even now only seven States are issuing DNT community certificates. In its annual report for 2025-26, the Union Social Justice and Empowerment Ministry said support from States was awaited despite letters and advisories issued for close to a decade.

In the report, the Ministry said that State and Union Territory governments were yet to share lists of eligible DNT beneficiaries awaiting housing allotments under the Centre's PMAY-G. Further, the Ministry said it had requested the States to share other



DNT communities have raised the issue of not getting community certificates, which affects their ability to claim benefits. FILE PHOTO

details such as population estimates of DNTs and lists of these communities residing in each State, and had urged them to issue DNT certificates and set up grievance redress mechanisms in letters written since as far back as 2015.

Over the past few years, DNT communities across various parts of the country had repeatedly raised the issue of community

certificates not being provided, which, in turn, affected their ability to claim benefits targeted at them.

Nearly 1,200 such communities, which were tagged as "criminal" by the colonial administration, were denotified in 1952 when the Criminal Tribes Act was repealed. Since then, a majority have been classified under the Scheduled Castes, the Sche-

duled Tribes or the Other Backward Classes lists, though nearly 300 communities are yet to be classified.

Community leaders have argued that the lack of community certificates and their "misclassification" into SC, ST and OBC lists has further marginalised them within these respective groupings. Sections of DNT communities have taken this argument further to mobilise for a separate classification for DNTs on a par with SC, ST, and OBC classifications.

However, even as the Ministry has maintained that there are no proposals under consideration for creating a new classification for DNTs, government officials have said that the ongoing Census 2027 exercise will count the population of these communities during the enumeration phase.

GS 3: ENVIRONMENT+ SCIENCE & TECH.+ INTER- NAL SECURITY

THE HINDU PAGE : 10

What are safer fireworks alternatives?

How loud do fireworks at Thrissur Pooram get? What do India's noise rules permit? What risks do fireworks pose to hospitals? What is cold spark technology? Are they safer than traditional fireworks? Why are noiseless alternatives not widely used yet? What transition is being proposed for Thrissur Pooram?

EXPLAINER

Divya Gandhi

The story so far:

As hundreds gathered to experience the grand fireworks display at the Thrissur Pooram festival in Kerala last year, a heavily caparisoned and disoriented elephant, Uttoly Raman, suddenly ran amok, leaving 42 people injured. The previous day, another parading elephant, Chirakkara Sreeraman, had attacked its mahout. "Elephants, like other animals, get disoriented not just by decibel levels, but also by the structure and frequency of noise," said Manjari Jain, Associate Professor, Department of Biological Sciences, IISER Mohali. In response to an RTI request filed by *The Hindu*, the Kerala State Pollution Control Board stated that noise levels during the 2025 festival peaked at as much as 122.4 decibels in one area. This was just under the **Central Pollution Control Board's 'Noise Standards for Firecrackers'**, which prohibit "the manufacture, sale or use of fire-crackers generating noise level exceeding 125 [decibels]... at 4 metres distance from the point of bursting."

What are the risks to hospitals?

As for permissible ambient noise levels, the **National Ambient Noise Monitoring Network** recommends 45-55 decibels in residential areas and 40-50 decibels in "silence zones" such as hospitals and educational institutions – far lower than the legal cap of 125 decibels for fireworks. Eminent social scientist Rajan Gurukkal has raised concerns about the proximity of Thrissur's fireworks to hospitals, especially those with neonatal intensive care units, and their impact on infant brain development. "The way the



Firefighters douse a blaze at a fireworks unit in Mundathikode, Thrissur, Kerala on April 21. PTI

festival is conducted in Thrissur violates ICU norms. Many facilities do not have soundproof windows, and the district hospital is minutes away from the fireworks," he told *The Hindu*. **The World Health Organization** notes that noise pollution is the third most hazardous environmental threat to human health, after air and water pollution.

What are the noiseless alternatives?

"It is time to go noiseless," said Professor Gurukkal, on April 21, when 13 people were killed and 40 injured in a blaze at a fireworks manufacturing unit in Mundathikode near Thrissur. "We do not need to reinvent the wheel, cold spark technology is available, but not yet scaled up." This technology, unlike traditional fireworks, uses a chemical combustion reaction of very fine granulated metal

alloy powders of titanium and zirconium, explained Samrat Ghosh, Assistant Professor at the Frugal Innovation Lab for Societal Benefit, Department of Chemical Sciences.

The 'cold sparkular', for instance, is a gun-like device equipped with a heater and a fan. The heater warms the fine alloy powder to increase its activation energy, while the fan blows the fine granulated metal alloy powders out. "When these fine powders eject out of the barrel of the hand-held gun, the heated fine powder reacts with the oxygen in the air and undergoes a rapid exothermic reaction that emits light with a sparkler-like effect as seen in traditional fireworks – but with no noise," Dr. Ghosh explained.

They can prevent burn injuries. While traditional sparklers emit temperatures of around 1,200 °C, cold sparkulars and cold anars operate at 60-100°C, he added.

Though already available commercially online, these pyrotechnics remain expensive – a single 'cold anar' can cost around ₹400 – and are largely manufactured in China. "We have plenty of scope in India as the technology is well known and one can indigenously make these nano-powders," Dr. Ghosh said.

Prof. Gurukkal emphasised that what is needed is "professionalism and management." Contemporary stage technologies show that we can create in-house spark fountains and colourful spark-circles on the floor, he said, adding that televisions routinely employ cold spark systems that generate bright, upward jets of sparkling light without explosive combustion, heavy smoke and high-decibels "but giving the same, if not a superior, visual effect".

"It is possible to deploy arrays of dozens or hundreds of spark units across open grounds, arranged linearly, radially, or in clusters, with sequential triggering of waves, expanding bursts, and cascading effects," he said. These could even be mounted on temporary towers to extend the visual field, "creating the illusion of vertical expansion into the night sky".

What is the way forward?

Delhi, which celebrated its loudest Diwali in three years, could also benefit from **cold spark technology**. As for Thrissur, Prof. Gurukkal said there should be an **incremental transition strategy in Kerala**, but that it would be ideal "to start with the Thrissur Pooram, the greatest among occasions that use parasols of intense air pollution with sound and smoke".

Initial integration of large-scale cold spark-based displays should be tested in Thrissur, the district famed in the country for its high-quality air, he said. "It is the responsibility of the Thrissur Corporation to substitute the existing method."

THE GIST

Noise levels at Thrissur Pooram peaked at 122.4 decibels – close to the legal cap – raising concerns over risks to animals, hospitals, and infant brain development.

Experts call for a shift to noiseless alternatives like **cold spark technology**, which can deliver similar visual effects without high decibel levels, smoke, or burn injuries.

GS 3: ENVIRONMENT + ECONOMY

THE HINDU PAGE : 8

Scaling climate adaptation from policy to grassroots

India is the ninth most climate-vulnerable country globally, with 430 extreme weather events recorded between 1995 and 2024, causing losses of \$170 billion and impacting 1.3 billion people. India's Nationally Determined Contributions (NDCs) for 2031-35 acknowledge these risks and emphasise the mainstreaming of climate resilience and adaptation into the country's development strategy.

The updated NDCs strengthen adaptation across coastal resilience, infrastructure, disaster preparedness, heat mitigation, biodiversity conservation and sustainable livelihoods. This aligns with global commitments to triple adaptation finance by 2035 and the adoption of Belém Adaptation Indicators at COP30. However, achieving these goals will require sustained financing and institutionalising adaptation from national to the grass-root levels.

Among key adaptation efforts, the Indian Council of Agricultural Research (ICAR)'s National Innovations in Climate Resilient Agriculture (NICRA) pilot spans 448 villages across 151 climate-vulnerable hotspots and maps risks in 651 districts, focusing on climate-smart agriculture and farmer capacity-building.

A model to watch

India's Economic Survey for 2025-26 recognises Tamil Nadu's Climate Resilient Villages (CRV) programme as a good practice. Under the Tamil Nadu Climate Change Mission (TNCCM), with support from the World Resources Institute (WRI) India, the CRV takes a holistic approach across 11 vulnerable districts, in consultation with local communities and administration. Interventions span water management, flood/drought mitigation, waste management, renewable energy, biodiversity conservation, alternate livelihoods and climate information.

Scaling up such models can help build adaptive capacity throughout the country. However, India's efforts towards adaptation have been scattered which makes financing these



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Adaptation can be advanced through coordinated governance, finance and local efforts

efforts difficult. While India's Economic Survey 2025-26 estimates adaptation and resilience spending at 5.6% of GDP in FY22, the Union Budget 2026-27 remains skewed toward mitigation.

Financing adaptation action

Developing countries face an annual financing gap of \$284-\$339 billion through 2035, as per the United Nations Environment Programme's (UNEP) Adaptation Gap Report, 2025. As India looks to sharpen its adaptation focus, domestic resource mobilisation will be key – requiring a clear typology for adaptation finance (which is prioritisation of sectors and assessment of the resources required for each vulnerable sector). However, India's Draft Framework of Climate Finance Taxonomy (2025) remains largely mitigation-focused and looks at emission avoidance, emission intensity reduction (with possible adaptation co-benefits) and activities supporting transition in hard-to-abate sectors.

It is vital to quantify adaptation benefits such as avoidable losses and socio-economic and environmental benefits including mitigation co-benefits. A WRI study estimates a ten-fold return on adaptation investment, making a case for leveraging private and international investment towards adaptation. Adaptation facilities at the state-level can help identify bankable adaptation projects that map benefits and widen the resource base.

Additionally, domestic public finance should be streamlined by tracking adaptation activities within State budgets, following which the Ministry of Finance can mandate climate budgeting through State Finance Departments. This can be integrated within annual budgetary planning processes through a budget circular. Such a mandate must incorporate timeframes for prioritisation of adaptation action with a monitoring framework. This should be complemented with cross-department consultative approaches and capacity building at

nodal departmental levels. NDCs are expected to be operationalised through a National Adaptation Plan, national missions and State Action Plans on Climate Change (SAPCCs). While most States drafted an initial SAPCC, only a few States submitted revisions in tune with NDC updates until 2030. Institutionalising planning requires regular climate vulnerability assessments at the State, district, and block levels, integrating socio-economic and livelihood factors. This calls for robust methodologies, updated data, capacity-building, and standardised monitoring, with periodic reviews and continuous data collection.

Adaptation strategies should ideally go beyond resilient infrastructure to encompass skill development, alternative livelihoods and guidelines for rehabilitation of affected populations. This can be done by leveraging existing State and district climate change cells or setting up new functional cells with a dedicated workforce. Clear reporting channels can further support cross-learning and timely interventions.

Facilitating locally led adaptation

Institutional mechanisms should extend to the level of urban local bodies and panchayati raj institutions to scale adaptation action. Locally Led Adaptation (LLA) was stressed at COP30. Co-developing resilience planning with communities – from planning and implementation to management, ownership, and leadership of needs-based interventions – is central to people-centric climate action. Applying place-based and context-specific approaches, such as extending the CRV initiative to different geographies, not only helps raise climate awareness but also enables communities to be a part of decision-making processes.

Preparedness for future climate impacts requires capacity-building and behavioural change across multiple levels. A whole-of-systems approach to adaptation is needed, where national commitments are met through grassroots action.

GS 3: ENVIRONMENT + DISASTER MANAGEMENT+ ECONOMY

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High heat

India must address the underlying vulnerability to hot weather

India's summers are known to be hot, but this year the high heat has arrived noticeably early. The India Meteorological Department has sounded heat alerts in central and south India, including in Vidarbha, Chhattisgarh, Odisha, Telangana and Kerala. Parts of Andhra Pradesh and Gujarat have also scaled the 40°C mark, with Tamil Nadu and Karnataka not far behind. Local conditions in coastal areas, in particular, could be worse due to humidity and the urban heat island effect. Warmer nights also delay physiological recovery, increasing the local health-care burden. Such temperatures are usually encountered in May-June but have become apparent in April. While pre-monsoon heatwaves are common in India, they are becoming larger and more intense. This year, a lack of western disturbances and thunderstorms, along with lower convective activity, has also done away with natural cooling, with residual effects of the previous El Niño adding to the heat. Persistently high heat is linked to a significantly higher risk of death from cardiovascular causes. Some 247 billion work-hours were lost in 2024 to heat, according to *The Lancet* Countdown Global Report, with workers in construction and agriculture the most affected. Heat stress is an ongoing concern for farmers during the *rabi* harvest. Hot weather accelerates crop maturity, threatening food security and feeding inflationary pressure.

Experts have complained that most heat action plans (HAPs) – India's primary institutional response to heat – focus on emergency response and lack funds for structural interventions such as urban re-greening and mandatory heat-safety legislation for workers in the informal sector. They have thus failed to address underlying vulnerabilities. On April 23, in the Tamil Nadu and West Bengal polls, and Gujarat and Maharashtra by-elections, lakhs of electors had to brave the heat. Concerns about voter turnout in the heat prompted the Election Commission of India to keep polling booths open longer during the 2024 general election; such reactive measures alone will not suffice this year. If warming continues along current trajectories, more than a few parts of India will begin approaching human survivability limits. HAPs desperately need sufficient, long-term funding while public systems must roll out mobile health units and doorstep delivery of essential services during peak heat to reduce the income penalties that deter access. Colombia has convened a coalition of roughly 50 countries to explore a faster transition away from fossil fuels in a parallel 'climate conference'. India should join it, not least because of the greater access to climate adaptation finance it could afford.