

DOPPLER WEATHER RADAR



The Indian Institute of Tropical Meteorology (IITM) in Pune commissioned a new X-band Doppler Weather Radar at Mahabaleshwar under Mission Mausam.

- **Doppler Weather Radar** is a specialized radar that uses the Doppler Effect to produce **velocity data about objects at a distance**.
- These radar systems can provide information regarding the **movement of targets** as well as **their position**.
- **Working of Doppler weather Radars:**
 - In radars, a beam of energy, **called radio waves**, is emitted from an antenna.
 - When this **beam strikes an object** in the atmosphere, the **energy scatters in all directions**, with some reflecting directly back to the radar.
 - The **larger the object** deflecting the beam, the **greater is the amount of energy** that the radar **receives in return**.
 - Observing the time required for the beam to be transmitted and returned to the radar allows weather forecasting departments to “see” raindrops in the atmosphere, and measure their distance from the radar.
 - **Types of weather Radar Bands:** Varying frequencies like **S-band, C-band and X-band** — are commonly used by the IMD in India.

Applications of Doppler weather Radars:

- **Weather System:** It is used to track the movement of weather systems and cloud bands, and gauge rainfall over its coverage area of about 500 km.
- X-band radar is used to **detect thunderstorms and lightning**, whereas a **C-band radar** helps in cyclone tracking.

ABHILEKH PATAL PORTAL



ABHILEKH PATAL PORTAL

- It is a **full-featured web-portal** to access the **National Archives of India's** reference media and its digitized collections through the internet.
- It is a digital repository thoughtfully **curated by the National Archives of India (NAI)**.
- It has a mission to provide easy access to India's historical archives, comprising of an astounding 7 million records.
- **Purpose:** Its purpose is to **ensure the effortless accessibility of historical records**, reaching across geographical borders to engage a diverse global community.
- The archival collections available through the Abhilekh Patal portal cover a wide range of historical records preserved by the National Archives of India. These include:
 - **Public records** transferred from various Ministries and Departments of the Government of India
 - **Private papers** of eminent personalities
 - **Archival reference** media such as photographs, maps, microfilms and rare documents
 - **Digitised historical government files** and archival collections maintained by NAI

Key facts about the National Archives of India

- It was **established on 11 March 1891** at Calcutta (Kolkata) as the **Imperial Record Department**, it is the biggest archival repository in South Asia.
- It has a vast corpus of records viz., public records, private papers, oriental records, cartographic records and microfilms, which constitute an invaluable source of information for scholars-administrators and users of archives.
- **Head office:** New Delhi
- It has one Regional Office in **Bhopal** and three Records Centres at **Bhubaneswar, Jaipur and Puducherry**.
- **Nodal Ministry:** Ministry of Culture, Government of India.

ELECTORAL ROLL REVISION - IMPACT OF SPECIAL INTENSIVE REVISION

- The electoral roll is a **constituency-wise list of eligible voters**, maintained by the Election Commission of India.
- It forms the foundation of India's electoral democracy, as only those registered in the roll can exercise the right to vote.
- The Constitution mandates that all citizens above 18 years of age, subject to certain disqualifications, must be included in the roll.
- Accuracy of the electoral roll is crucial for ensuring free, fair, and credible elections.

Types of Electoral Roll Revisions

- Electoral rolls are updated through two main processes.
 - **Summary Revision** is conducted annually with limited corrections and additions.
 - **Special Intensive Revision (SIR)** involves a **comprehensive re-verification of voters**, often requiring fresh enumeration and documentation.
- SIR is more rigorous and aims to eliminate inaccuracies accumulated over time.

Growth of India's Electorate

- India's electorate has expanded significantly since independence.
- From about **17 crore voters in 1951**, it has grown to over **96 crore in recent years**, reflecting population growth and improved voter registration.
- At one point, the total electorate was projected to approach **100 crore**, highlighting the scale of India's democratic system.

Impact of Special Intensive Revision

- **Reduction in Electoral Roll Size**
 - The SIR exercise has led to a significant trimming of electoral rolls by removing names of absent, shifted, dead, and duplicate voters (ASDD).
 - Across 13 States and Union Territories, the **number of electors declined from about 51 crore to below 46 crore during the revision process**.

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- **Higher Voter Turnout Despite Smaller Electorates**
 - States such as Tamil Nadu recorded over 85% turnout, significantly higher than previous elections.
 - Similarly, West Bengal witnessed turnout levels above 90% in certain phases.
 - This trend is partly attributed to the removal of “ghost voters,” which increases turnout percentages when calculated on a reduced voter base.
- **Reasons for Deletion of Names**
 - The primary reason for the decline in voter numbers is the removal of ASDD entries.
 - Additional deletions occurred due to non-submission of enumeration forms, inability to verify identity, and failure to meet eligibility criteria.
- **Partial Recovery through Fresh Enrolment**
 - While initial drafts showed sharp reductions, final rolls witnessed some recovery due to new registrations and corrections.
 - For example, Uttar Pradesh saw a drop from 15.44 crore to 12.55 crore in draft rolls, later rising to 13.39 crore in final rolls.
 - This indicates that SIR is not purely a deletion exercise but also includes the re-inclusion of eligible voters.
- **Possible Decline in National Electorate Size**
 - After covering nearly **60 crore voters**, the overall electorate has already declined by around **6 crore**.
 - Once completed nationwide, the total electorate could fall to around **90 crore**, reversing the earlier trend towards a billion voters.
- **Need for Balancing Accuracy and Inclusion**
 - While SIR improves the accuracy of electoral rolls, it must ensure that no eligible voter is left out.
 - The Election Commission now faces the challenge of restoring confidence by focusing on inclusion alongside verification.

SUMMER AS A SOURCE OF INCOME SHOCK FOR GIG WORKERS

Rising Heatwaves and Expanding Gig Economy

- **Increasing Frequency of Heatwaves**
 - Recent meteorological data highlight a clear trend: heatwaves in India are becoming more frequent, longer-lasting, and more severe.
 - The year 2022 alone recorded significant heat-related **mortality**, reinforcing the urgency of the issue.
 - These patterns indicate that extreme heat is no longer an isolated risk but a persistent climatic challenge.
- **Growth of the Gig Workforce**
 - According to NITI Aayog, approximately **77 lakhs** individuals were engaged in gig work in 2020–21, a number expected to rise to over 23 million by 2029–30.
 - This workforce includes delivery riders, e-commerce couriers, app-based drivers, and logistics personnel who play a crucial role in sustaining urban economies.

Economic Impact of Heat on Gig Workers

- **Income Linked to Productivity**
 - Gig workers' earnings are directly tied to their output, such as the number of deliveries completed or hours spent on digital platforms.
 - Unlike salaried employees, they lack fixed wages, paid leave, or the option to work remotely.
- **Heat as an Income Shock**
 - High temperatures slow physical movement, increase fatigue, and elevate health risks such as dehydration and heat exhaustion.
 - As a result, workers face a difficult choice: **reduce working hours and lose income**, or continue working and risk their health.
 - Thus, heatwaves act not only as a public health hazard but also as a direct economic shock for gig workers.

The Way Forward: Rethinking Climate Resilience

- India's urban systems increasingly rely on gig and delivery workers for essential services such as food and medicine delivery. These workers absorb significant risks to keep cities functioning. As temperatures rise, their exposure to these risks will intensify.
- True resilience must go beyond issuing advisories or setting up cooling centres.
- It must ensure that workers can operate safely and **maintain stable incomes** without compromising their health.

Conclusion

- India's approach to heatwave preparedness **remains incomplete** as long as it overlooks the economic vulnerabilities of gig and delivery workers.
- With rising temperatures and a rapidly expanding gig economy, the need for **inclusive and coordinated adaptation strategies** is more urgent than ever.
- Protecting this essential workforce is not only a matter of **social justice** but also critical to sustaining the **functioning of urban economies** in an era of climate uncertainty.

WHY FIRECRACKER FACTORY EXPLOSIONS ARE FREQUENT IN INDIA

- Firecracker manufacturing is highly sensitive to climatic conditions because it involves volatile chemical mixtures.
- While warm, dry weather is generally preferred for production, extreme summer heat increases instability, making chemicals more prone to ignition.
- **Low humidity** further worsens the situation by preventing the dissipation of static electricity, allowing even minor movements—like mixing powders—to generate sparks capable of triggering explosions.
- **Role of Moisture and Temperature Fluctuations**
 - It is not just **dryness** that poses risks. Fluctuations between dry heat and humid conditions can introduce moisture into chemical compounds.
 - When such damp chemicals are later exposed to intense heat, they can undergo exothermic reactions or even spontaneous combustion.

- **Improper drying practices**, especially when chemicals are alternately exposed to moisture and sunlight, significantly increase the likelihood of accidents.
- **Environmental Conditions in Firecracker Hubs**
 - Regions like Virudhunagar, despite not being extremely low in humidity, experience hot, arid conditions with low rainfall, creating an environment conducive to instability in chemical handling.
- **Additional Hazards: Toxic Dust Accumulation**
 - Apart from explosion risks, stagnant summer heat traps toxic chemical dust near the ground, increasing the oxidative potential of the air inside factories.
 - This not only raises fire hazards but also poses serious health risks to workers.

Human Factors Behind Firecracker Accidents: Systemic Risks

- While climatic and chemical risks are well understood, the human factor is often the decisive trigger behind major accidents.
- A key issue is the piece-rate wage system, where workers are paid based on output.
- This creates pressure to prioritise speed over safety, leading to shortcuts in handling highly volatile materials.
- **Weak Enforcement and Regulatory Gaps**
 - Despite existing regulations under the Explosives Act, enforcement remains weak.
 - Non-compliance is widespread, especially in areas like safe storage, ventilation, and handling protocols, increasing the likelihood of accidents.
- **Dangerous Storage Practices**
 - A major risk arises from the stockpiling of raw chemicals and finished fireworks in confined, poorly ventilated spaces, often far exceeding legal limits.
 - These unsafe practices turn minor ignition sources into large-scale disasters.
 - In such conditions, even a small static spark—common in hot weather—can trigger a chain reaction, rapidly escalating into deadly explosions due to the presence of unregulated and densely packed combustible materials.

B'NEI MENASHE: NORTHEAST INDIA'S 'LOST TRIBE' AND ITS ISRAEL



CONNECTION

Around 250 members of the **B'nei Menashe** from Manipur and Mizoram recently arrived in Tel Aviv under an **official relocation programme**—the first such batch supported by the Israeli government.

The community, numbering about 7,000 and drawn largely from Mizo and Kuki tribes, claims descent from one of the “**ten lost tribes of Israel**.”

While migration to Israel has been ongoing since the 1990s, this marks a new phase of state-backed resettlement, with more groups expected to follow.

The 'Lost Tribes of Israel': Origins and the B'nei Menashe Claim

- Around 722 BCE, the Assyrian conquest of Israel led to the exile of ten tribes from northern Israel. These included Reuben, Simeon, Dan, Naphtali, Gad, Asher, Issachar, Zebulun, Ephraim, and **Manasseh**.
- Over time, their descendants became known as the “**lost tribes of Israel**”, with their whereabouts remaining uncertain.
- **Global Search for Descendants** - For centuries, Jewish communities worldwide have searched for traces of these tribes, including in regions like the Indian subcontinent, where several groups claim ancestral links.
- **The B'nei Menashe Claim** - The B'nei Menashe of Manipur and Mizoram believe they descend from the tribe of Manasseh, the largest among the lost tribes. Their name literally means “sons of Manasseh.”
- **Migration Narrative and Cultural Link** - According to community belief, their ancestors migrated eastward over centuries through Persia (modern Iran) and Afghanistan before settling in Northeast India.
- **Role of Religious Transformation** - Interestingly, the belief in Jewish ancestry gained traction after the community's conversion to Christianity, which exposed them to biblical narratives and shaped their understanding of possible historical roots.

Re-establishing Links with Israel: Recognition, Migration, and Challenges

- Efforts were made to highlight **oral histories and cultural practices** linking the B'nei Menashe to Israel.
- In 2005, the Chief Rabbinate of Israel recognised them as the “**Lost Seed of Israel**”, based partly on inconclusive genetic studies.
 - However, further tests by Technion – Israel Institute of Technology also remained inconclusive, keeping the scientific debate unresolved.
- **Migration Policies and Institutional Support**
 - Following recognition, Israel allowed gradual migration in small batches, sometimes pausing the process.
 - In November 2025, the Israeli government approved funding for the relocation of nearly 5,000 B'nei Menashe members, marking a significant step in formal resettlement efforts.
 - Despite recognition, many B'nei Menashe migrants face racial discrimination and integration challenges in Israel, particularly due to differences in physical features and cultural background.

Other ‘Lost Tribes’ Claims: Diverse Identities and Motivations

- Another Indian group, the B'nei Ephraim, claims descent from the tribe of Ephraim.
- They believe their ancestors reached India via Central Asia about a thousand years ago.
- Belonging largely to the Dalit community, their claim to Jewish ancestry is sometimes interpreted as a way to challenge caste discrimination and seek social mobility, including recognition from global Jewish communities.