

ONE NATION ONE TIME: GEOGRAPHY

NEWS: New rules will synchronise use of IST for legal, commercial activities, says Pralhad Joshi

WHAT'S IN THE NEWS?

The Government of India has introduced the Draft Legal Metrology (Indian Standard Time) Rules, 2025 to enforce mandatory nationwide synchronisation with Indian Standard Time (IST), ensuring high-precision timekeeping and strategic self-reliance. It aims to reduce dependence on foreign systems like GPS and improve coordination in legal, administrative, and commercial sectors.

Draft Legal Metrology (Indian Standard Time) Rules, 2025

Context:

- The Union Ministry of Consumer Affairs released the draft Legal Metrology (Indian Standard Time) Rules, 2025.
- Aim: To mandate synchronisation of all legal, administrative, and commercial activities in India with Indian Standard Time (IST).

Objective: One Nation, One Time

- To implement a uniform time system across India based on IST (UTC +5:30).
- Eliminate dependence on foreign timekeeping sources like GPS.
- Achieve precision in time synchronisation—up to the level of milliseconds and microseconds.

- Strengthen national security, digital infrastructure, and scientific reliability.



Key Features of the Draft Rules:

- **Mandatory Adoption of IST:**
 - All government departments, legal authorities, businesses, and service providers must use IST maintained by CSIR-NPL.
 - Foreign time sources (e.g., GPS) cannot be used without specific approval from the government.
- **IST Dissemination Infrastructure:**
 - Five Regional Reference Standard Laboratories (RRSLs) are being established for IST dissemination:
 1. Ahmedabad
 2. Bengaluru
 3. Bhubaneswar
 4. Faridabad

5. Guwahati

- Each RRSL will be equipped with high-precision atomic clocks.
- **Time Synchronisation Protocols:**
 - Use of standard protocols like Network Time Protocol (NTP) and Precision Time Protocol (PTP) will be compulsory for public and government operations.
 - These protocols will enable real-time precision and accuracy in digital transactions and critical operations.
- **Exemptions Allowed:**
 - Scientific, astronomical, and navigational activities may apply for exemption from the IST mandate.
 - Requires prior government approval.
- **Monitoring and Enforcement:**
 - Time audits will be conducted regularly to ensure compliance.
 - Penalties may be levied for failure to comply with synchronisation norms or use of unauthorised time sources.

Implementing Agencies:

- **Nodal Ministry:**
 - Department of Consumer Affairs, Government of India.
- **Collaborating Institutions:**
 - CSIR–National Physical Laboratory (NPL): Custodian of IST.
 - Indian Space Research Organisation (ISRO): Technical support and satellite linkage.

Strategic Background:

- The need for an indigenous timekeeping standard became evident during the 1999 Kargil War.
- Over-dependence on foreign satellites for time data posed security and operational risks.
- Strengthening indigenous systems like IST ensures sovereignty in cyber and strategic domains.

Strengths of the ‘One Nation, One Time’ Policy:

- Enhances digital integrity in sectors like banking, telecom, navigation, and emergency response.

- Boosts coordination across time-sensitive operations—disaster response, power grids, and air traffic.
- Ensures strategic independence from foreign satellite systems such as GPS.
- Aligns with the Digital India and Aatmanirbhar Bharat missions by fostering indigenous capability.
- Improves timestamp accuracy for legal and judicial applications, like e-filing and contract enforcement.

Hurdles and Challenges:

- High initial costs for deploying atomic clocks and synchronisation systems nationwide.
- Technical complexity in integrating NTP/PTP protocols, especially in remote and rural areas.
- Coordination issues across multiple departments and jurisdictions.
- Operational disruptions during migration from current systems to IST-based infrastructure.
- Potential resistance from service providers who rely on GPS or foreign systems.

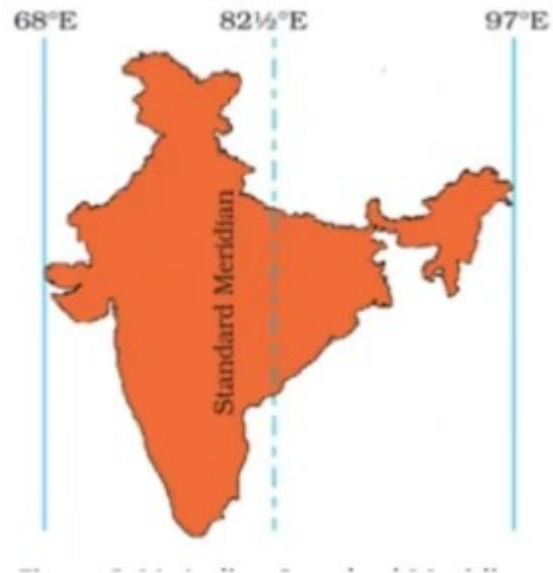
About CSIR–National Physical Laboratory (NPL):

- NPL is India’s official national metrology institute.
- Responsible for maintaining and disseminating Indian Standard Time (IST) using atomic clocks.
- Also maintains national standards for physical quantities—length, mass, temperature, etc.
- Supports industries by providing calibration services and developing measurement technologies.

What is an Atomic Clock?

- A timekeeping device based on the vibrations (resonance frequencies) of atoms like cesium or rubidium.
- Time is measured by tuning microwave radiation to match the frequency of atomic transitions.
- Atomic clocks provide extreme accuracy—variation of only 1 second in millions of years.
- First invented in 1955 by Louis Essen (UK).
- In India, CSIR–NPL manages atomic clocks at Faridabad and Ahmedabad.

Indian Standard Time (IST):



- IST is fixed at UTC +5:30.
- Based on the 82.5° E longitude (passes through UP, MP, Chhattisgarh, Odisha, and Andhra Pradesh).
- The Allahabad Observatory computes the local mean time for IST.
- Official time is maintained and disseminated by CSIR–NPL (New Delhi).