



2 Time Zones in India

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Why in News?

- Recently Council of Scientific & Industrial Research's National Physical Laboratory (CSIR-NPL), which maintains Indian Standard Time (IST), published a research article describing the necessity of two time zones.
- Suggesting two time zones and two ISTs in India: IST-I for most of India and IST- II for the Northeastern region – separated by difference of one hour
- IST-I, covering the regions falling between longitudes 68°7'E and 89°52'E and IST-II covering the regions between 89°52'E and 97°25'E.

Who is Demanding?

- Northeast have long complained about the effect of a single time zone on their lives and their economies.
- In 2006, India's federal planning commission recommended the division of the country into two time zones.
- National Physical Laboratory (NPL) - India's official timekeeper - has supported a long standing demand for a separate time zone for eastern states

Time zone

- Scottish-born Canadian Sir Sandford Fleming proposed a worldwide system of time zones in 1879.
- Eventually in 1884 International meridian conference adopted a 24 hour day.
- Countries across the world keep different times because of Earth's rotation and revolution around the Sun.
- As Earth turns by 15° around its axis, time changes by one hour; a 360°-degree rotation yields 24 hours.
- As a result, the world is divided into 24 time zones shifted by one hour each.

Indian Standard Time

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- IST is based on longitude 82.5°, which passes through Mirzapur, near Allahabad in Uttar Pradesh.
 - It is 5 hours 30 minutes ahead of Greenwich Mean Time (GMT), now called the Universal Coordinated Time (UTC).
 - Keeper of the time in India is the CSIR-National Physical Laboratory (NPL), New Delhi, which records time using five caesium atomic clocks.

History of Time Zones in India

- India used to have two time zones, Bombay Time and Calcutta Time, first established in 1884 during the British Raj.
- Indian Standard Time is an anachronism like many systems that were inherited from the British.
- It was in 1906 that India had a single IST running through center of country.
- There was a one-hour-nine-minutes time difference between Kolkata and Mumbai. Yet, today these cities, which are 1,650km apart, share the same time.
- Tea estates of Assam, where the concept of 'bagaan time' (estate time) exists, is there a provision for a separate time zone inside India. Bagaan time is one hour ahead of IST.

Need of Two Time Zones

- India is geographically the second-largest country not to have multiple time-zones
- India stretches from 97 degree 25 minute East in Arunachal to 68 degree 7 minute East in Gujarat — almost 30 degrees of longitude which is more than enough to have two time-zones.
- Northeast lose important daylight which can be used productively as the sun rises as early as 4 am in summer and offices open at 10.
- Many people in India operate in a time zone that is not an appropriate diurnal cycle for them
- People's productivity and efficiency follows a biological clock that is synchronized with the daily light-dark cycles.
- From the body's circadian rhythm point of view, the existing IST is highly suitable for Kanyakumari, Kavaratti, and Ghuar Mota; manageable for Alipurduar, Kolkata, Gangtok, Mirzapur and Gilgitum; but highly unsuitable for Dong and Port Blair.

Circadian Rhythm

- Circadian rhythm is the 24-hour cycle that tells our bodies when to sleep, rise, and eat —regulating many physiological processes.
- Internal body clock is affected by environmental cues, like sunlight and temperature, and determines whether one feels wide-awake and energized or tired.

- **Jeffrey C. Hall, Michael Rosbash, and Michael W. Young**, who studied the molecular mechanisms controlling circadian rhythm, were awarded the 2017 Nobel Prize in the category of physiology or medicine.

Benefits

- Lead to greater efficiencies among the workforce and on energy consumption.
- Advancing IST by just a half hour would result in saving 2.7 billion units of electricity every year by using the waste daylight hours.
- Reduction in energy consumption will significantly cut down India's carbon footprint boosting India's resolve to fight climate change.
- There are also economic benefits to having two different time zones; people will be able to work better and plan better, according to natural cycles.
- Many social policy objectives can be achieved such as reducing road accidents and improving women's safety.
- Two time zones will allow aligning standard time with daylight time.

Problems

- Mismatch in office timings, different working hours for banks and a chance that railway accidents might become more frequent.
- Implementing two time zones will require synchronizing railway traffic which otherwise will create utter confusion.
- With significant illiteracy levels, if the country were divided into two time zones, there would be chaos at the border between the two zones. It would mean resetting clocks with each crossing of the time zone.
- CSIR-NPL would need a second laboratory in the new time zone. This would consist of 'Primary Time Ensemble-II', traceable to the UTC at BIPM in France.
- Marking of the dividing line of the two zones would be a problem.
- Two time zones can have adverse political consequences as India apart from getting divided on the lines of religion, caste, race, language, etc, now will get divided on the lines of Time Zones.

Available Alternatives

- NIAS (National Institute for Advanced Science) cited that Permanent shift of IST to one hour will be better than two time zones or DST i.e. 6:30+ UTC to 90 degree east.
- Daylight Saving Time can also be used from April to September.

Daylight Saving Time

Daylight Saving is a procedure in which the time in the clock is adjusted forward in spring & is readjusted backward in autumn.

Advantages of Daylight Saving:

- Helps to save energy.
- It provides additional daylight hours in the evening.
- It increases productivity.
- It helps to increase the tourism as due to the increase daylight hours tourists would stay out for longer period & spend more.

Way Forward

- Implementation of these recommendations must be supported by the ability of the government to gather data and track changes in economic activity pattern of the nation.
- Factors like impact of sunrise and sunset timings on biological activities of people; synchronizing sunrise and sunset timings with office hours should be carefully studied.
- Minimization of spatial extension at the proposed border of time demarcation etc needs to be taken care.
- It is important to consult all stakeholders and arrive at a better solution so as to use the lost light hours that are dimmed by a common IST.

For Mind Map