



Speed of Light

[Source: TH](#)

The [speed of light](#), a **fundamental constant in physics**, has been determined with increasing precision over centuries.

- The speed of light is the rate at which light waves **propagate through different materials**. In particular, the **speed of light in a vacuum** is defined as exactly **299,792,458 meters per second**.
 - Light's speed can vary when it propagates through different materials, depending on the **material's refractive index** (measure of bending of a light ray when passing from one medium to another).
- Early estimates of the speed of light were based on **how long it took light to travel a known distance**, with measurements improving as instruments advanced.
- **Ole Roemer (1676)** was the **first to estimate the speed of light**, observing Jupiter's moons and their varying eclipse timings based on Earth's distance from Jupiter.
 - His estimate was 225,300 km/s, which was far from the modern value due to limited knowledge of Jupiter's distance.
- Modern measurements of the speed of light are conducted using **laser beams and atomic clocks**, resulting in the current precise value.

Read more: [Time Dilation in Early Universe](#)

Human Interaction Threat to Lion-Tailed Macaques

[Source: TH](#)

The endangered [lion-tailed macaque \(LTM\)](#) faces threats from **increasing human interactions**, driven by **habitat encroachment and food provisioning**.

- Human-provided food causes [malnutrition](#), **disease**, **dependency**, and increases risks of **road accidents** and human aggression.
 - LTM is highly **adaptable to human-altered environments** and frequently interacts with humans.

//



▪ **About Lion-tailed Macaque:**

- They are **old world monkeys** endemic to the [Western Ghats](#) of India.
 - Their key habitats include the [Anamalai Hills](#), Nelliampathy, Nilambur Ghats, [Sholayar](#), Gavi, [Sabarimala](#), Vallimalai Hills and Agumbe of the Western Ghats.
- The lion-tailed macaque's **black fur** and **light mane** around its head and chin give it the nickname "**beard ape.**"
- **Dominant males** of the group emit loud, **human-like 'whoops'** to alert outsiders entering their territory.
- **Conservation Status:**
 - [IUCN Red List](#): Endangered
 - [CITES](#): Appendix I
 - [Wildlife \(Protection\) Act, 1972](#): Schedule I

Western Ghats

One of the four biodiversity hotspots of India; recognised as a UNESCO WHS (2012)



Names

- Sahyadri - northern Maharashtra; Sahya Parvatham - Kerala

Diverted views about Mt. type

- View 1: Block Mt. formed due to down warping of a part of land into Arabian Sea
- View 2: Not true mt. rather the faulted edge of Deccan Plateau

Major Rocks

- Basalt, granite gneiss, khondalites, metamorphic gneisses, crystalline limestone, iron ore

Geographical Extent

- Satpura (in north) to the end of TN at Kanyakumari (in south)

Mt. Ranges

- Nilgiri ranges, Shevaroy's and Tirumala range
- Highest peak - Anamudi (Kerala)

Rivers (originating)

- West-flowing: Periyar, Bharathappuzha, Netravati, Sharavathi, Mandovi
- East-flowing: Godavari, Krishna, Kaveri, Tunga, Bhadra, Bhima, Malaprabha, Ghataprabha, Hemavathi, Kabini

Endemic Species

- Nilgiri tahr (IUCN Status - EN)
- Lion-tailed macaque (IUCN Status - EN)

Imp Protected Areas

- Biosphere Reserves - Agasthyamala and Nilgiri
- NP - Silent Valley, Bandipur, Eravikulam, Wayanad-Mudumalai, Nagarhole
- TR - Kalakad-Mundanthurai, Periyar

Imp Passes

- Thal Ghat Pass (Kasara Ghat)
- Bor Ghat Pass
- Palakkad Gap (Pal Ghat)
- Amba Ghat Pass
- Naneghat Pass
- Amboli Ghat Pass

Significance

- Hydroelectricity production
- Influences Indian monsoon weather patterns
- Carbon sequestration (neutralise ~4 MT of carbon every year)
- One of the 8 global hottest hotspots of biodiversity (due to richness in species and endemism)
- Rich in iron, manganese and bauxite ores, timber, pepper, cardamom, oil palm and rubber
- Sizeable indigenous population (including PVTGs)
- Important tourism/pilgrimage centres

Major Threats

- Mining, industrialisation
- Massive extraction of forest produce
- Human-wildlife conflict, encroachment, illegal hunting
- Livestock grazing, deforestation
- Large hydropower projects
- Climate change

Imp Committees

- Gadgil Committee (2011) (Western Ghats Ecology Expert Panel)
 - » Recommendation: All of WG be declared as Ecological Sensitive Area (ESA) with only limited development allowed in graded zones.
- Kasturirangan Committee (2013)
 - » Recommendation: Instead of whole, only 37% of the total area of WG be brought under ESA + complete ban on mining, quarrying and sand mining be imposed in ESA.



Read More: [Lion-Tailed Macaques](#)

Jallikattu

Source: TH

The Tamil Nadu government has issued a **Standard Operating Procedure (SOP)** for safe **Jallikattu** events in 2025, guided by the **Animal Welfare Board of India**.

- Events must adhere to **Section 3(2) of the Tamil Nadu Prevention of Cruelty to Animals (Conduct of Jallikattu) Rules, 2017**, allowing Jallikattu only at notified locations with **permissions**, ensuring bull safety and cruelty prevention.
- Tracing back over 2,000 years, Jallikattu, a traditional sport of Tamil Nadu was originally held to select a **suitable bridegroom**.

- The sport is linked to the **Ayars**, an ethnic group in India, and its name derives from "**Jalli**" (**coins**) and "**Kattu**" (**tied**).
- It is celebrated on **Mattu Pongal Day** (3rd day of Pongal), where a bull is released, and participants **tame a bull to win coins tied to its horn**.
- The sport uses the **Pulikulam or Kangayam breed of bulls**, which are highly valued for breeding and market sales.
- A seal representing Jallikattu was found at the [Indus Valley site](#), preserved in the National Museum, New Delhi. A 1500-year-old cave painting near Madurai also depicts the sport.
- Different Jallikattu versions, like **Vadi manjuvirattu**, **Vēli virattu**, and **Vaṭam manjuvirattu**, have varying rules on the duration of holding the bull or the distance to cover.



Read more: [Jallikattu](#)

Annual Survey of Unincorporated Sector Enterprises 2023-24

For Prelims: [Annual Survey of Unincorporated Sector Enterprises \(ASUSE\)](#), [Unincorporated Non-Agricultural Establishment](#), [Informal Sector](#), [MSMEs](#), [Self-Help Groups \(SHGs\)](#), [Cooperatives](#), [Gross Value Added](#), Gross Value of Output, [Formal Sector](#), [Supply Chain](#), [Minimum Wages](#), [Directive Principles of State Policy](#).

For Mains: State of unincorporated sector enterprises in India, Associated challenges and way forward.

Source: [PIB](#)

Why in News?

Recently, the **Ministry of Statistics and Programme Implementation (MoSPI)** has released the results of [Annual Survey of Unincorporated Sector Enterprises \(ASUSE\)](#) for **2023-24** for the reference period October 2023 - September 2024.

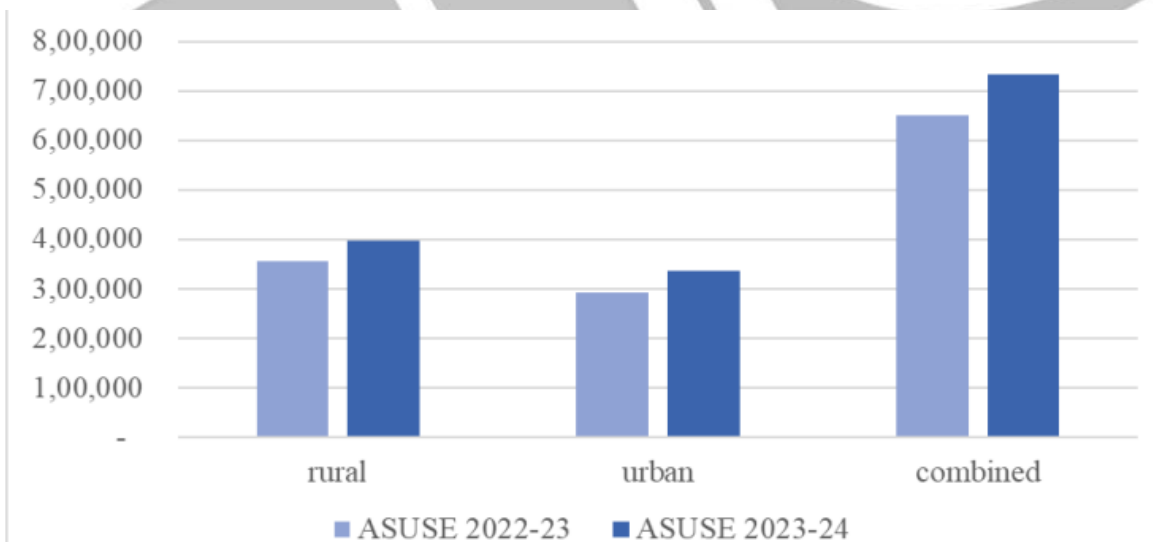
- A **reference period** is a **specific time frame** used for collecting and analyzing data or statistics.

What is ASUSE?

- **About:** ASUSE **exclusively** measures various economic and operational characteristics of **unincorporated non-agricultural establishments** in **manufacturing, trade and other services sector** (excluding construction).
 - Unincorporated non-agricultural establishments are enterprises in the **unorganised or informal sector**, comprising **MSMEs, household units** including those with hired workers, and **own-account enterprises**.
- **Coverage:**
 - **Geographic:** **Rural and urban areas** of the whole of India (except the villages in Andaman and Nicobar Islands, which are difficult to access).
 - **Sector Wise:** Unincorporated non-agricultural establishments belonging to three sectors viz., **Manufacturing, Trade and Other Services**.
 - **Ownership:** Proprietorship, partnership (excluding Limited Liability Partnerships), **Self-Help Groups (SHGs), cooperatives**, societies/trusts etc.
- **Survey Timeline:** The **first** full ASUSE was conducted in **2021-22** (April 2021 - March 2022), followed by the 2nd survey from October 2022 to September 2023.
 - The current **3rd survey (ASUSE 2023-24)** was conducted from **October 2023 to September 2024**.
- **Sample Size:** In ASUSE 2023-24, data were **collected** from a total of **4,98,024 establishments (2,73,085 in rural and 2,24,939 in urban)** from **16,842 surveyed first stage units** (8,523 in rural and 8,319 in urban).
 - First stage units were census **villages in rural areas and blocks in urban areas**.

What are the Key highlights of the ASUSE 2023-24 Results?

- **Growth in Establishments:** Total number of establishments **increased by 12.84%**, from 6.50 crore in 2022-23 to **7.34 crore in 2023-24**.
 - The "**Other Services**" sector showed the highest growth at **23.55%**, followed by the **manufacturing** sector with a **13%** increase.



- **GVA Growth:** **Gross Value Added (GVA)** rose by **16.52%**, driven largely by a 26.17% growth in the "Other Services" sector.
 - **GVA per worker** increased by **5.62%**, rising to Rs. 1,49,742 in 2023-24 from Rs. 1,41,769 in 2022-23.

PRODUCTIVITY



GVA per Establishment

Rs. 2,45,687

Growth

3.16%

GVA per Worker

Rs. 1,49,742

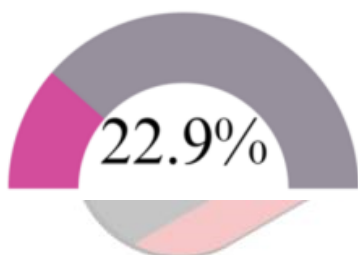
Growth

5.62%

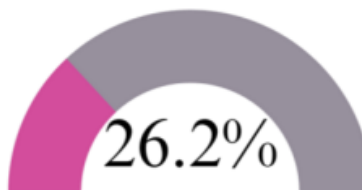
- **Output per Establishment: Gross Value of Output (GVO)** per establishment grew by **6.15%** from Rs. 4,63,389 to **Rs. 4,91,862** in current prices.
 - GVO refers to the **total value of goods and services** produced by an establishment during a specific period.
- **Labour Market Performance:** The sector employed **over 12 crore workers**, an increase of more than one crore from 2022-23, signaling robust labour market growth.
 - **"Other Services"** sector saw the highest annual growth of **17.86%**, followed by manufacturing with **10.03%**.
- **Female Entrepreneurship:** Female-owned proprietary establishments **rose** from 22.9% in 2022-23 to **26.2% in 2023-24**, indicating a positive trend in women's business ownership.

Percentage of Female Owned Proprietary Establishments

ASUSE 2022-23



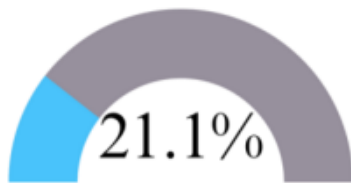
ASUSE 2023-24



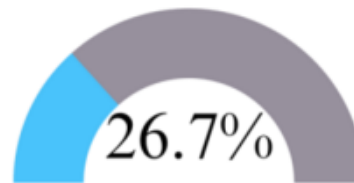
- **Improvement in Wages:** Average **emoluments** for hired workers increased by **13%** in 2023-24, with the highest growth observed in the **manufacturing sector (16%)**.
- **Digital Penetration:** Establishments using the **internet** grew significantly, from 21.1% in 2022-23 to **26.7% in 2023-24**, highlighting a strong trend toward digital adoption in business operations.

Percentage of Establishments using Internet

ASUSE 2022-23



ASUSE 2023-24



Key Concepts and Definitions

- **Enterprise:** An **entity producing goods and services** with autonomy in financial and investment decisions, responsible for resource allocation.
- **Unincorporated Non-Agricultural Establishment:** They are **not incorporated** (i.e., neither registered under [Companies Act, 1956](#) nor under [Companies Act, 2013](#)).
- **Manufacturing Establishment:** Units involved in **transforming materials into new products** or providing manufacturing services, including maintenance and repair.
- **Emoluments: Regular payments** (salary, wages, bonuses) and employer contributions to social security benefits, including in-kind payments like healthcare or recreation.
- **Gross Value Addition (GVA):** GVA is the **difference** between the **gross value of output and intermediate consumption (inputs)**.
- **Hired Worker Establishment (HWE):** Establishment employing at **least one hired worker regularly**.
- **Other Service Establishments:** They refer to unincorporated enterprises engaged in various service activities that **do not fall in trade and manufacturing categories**.

What is the Importance of Unincorporated Non-agricultural Units in the Indian Economy?

- **Employment Providers:** The [Economic Survey of 2018-19](#) reports that **93% of India's workforce** is employed in the informal sector, making it the largest employment provider.
- **Regional Balance:** Informal enterprises help reduce regional imbalances by **industrialising rural areas** and providing employment to individuals with **limited capital**.
- **Entrepreneurship:** Small informal firms foster entrepreneurship, particularly for vulnerable groups such as **women, youth**, and individuals in **marginalized communities**.
- **Support for the Formal Sector:** It provides goods and services to the [formal sector](#) that may not be efficiently produced by larger firms, or by supporting the [supply chains](#) of formal enterprises.
- **Dynamic Role:** The unincorporated sector accounts for **38% of firms in services, 35% in trade (mainly retail), and 27% in manufacturing** highlighting the importance of informal enterprises across different sectors.

What Challenges Related to Unincorporated Non-agricultural Units in India?

- **Gender Disparities:** Women make up a significant portion of the informal workforce, yet they face severe disadvantages, including **lower wages, income instability, and the absence of social security**.
- **Vulnerability to Uncontrollable Factors:** During the [monsoon season](#) in India, construction activities often come to a halt, leaving **migrant workers** without steady work.
- **Lack of Employment Protections:** Informal employment by nature **lacks** the protections and benefits associated with formal employment, such as **written contracts, minimum wages, paid leave, and regulated working hours**.
- **Tax Evasion:** Many firms **evade taxes** by concealing revenue and expenses from the legal system resulting in a **substantial loss** of government revenue.

- **Challenges in Growth:** Long-term stagnation remains a concern, with the sector's growth rate from **2015-2023** showing **minimal expansion of only 2%**.
- **Absence of Accurate Data:** The **Economic Survey of 2018-19** states that **93%** of India's workforce is informal, while the [Niti Aayog's Strategy for New India at 75](#) estimates it at **85%**.
- **'Report of the Committee on Unorganised Sector Statistics'** of the **National Statistical Commission (NSC), 2012** claims **over 90%** of the workforce is informal, though sources are not specified.

Way Forward

- **Encouraging Formalization:** Encourage **formalization** by simplifying **registration** processes, **reducing taxes** for small firms, and providing **incentives** for businesses to comply with labor and safety standards.
- **SHGs for Empowerment:** Establishing **self-help groups (SHGs)** can provide informal employees with the tools and support they need to improve their working conditions and economic security.
- **Comprehensive Database:** Collecting detailed data on the **informal economy** helps policymakers make informed decisions, design targeted interventions, and assess policy impact.
- **Equal Pay for Equal Work:** The government should enforce measures ensuring equal pay for equal work, as per [Article 39\(d\)](#) of the [Directive Principles of State Policy](#).
- **Capacity Development:** Offer skill development programs for informal workers, covering trades like **carpentry, plumbing, tailoring, food processing**, digital literacy, and soft skills.
 - Introduce apprenticeship and **mentoring programs** for experienced workers to **train newcomers**.

Drishti Mains Question:

Assess the role of unincorporated non-agricultural establishments in the Indian economy

UPSC Civil Services Examination Previous Year Question (PYQ)

Prelims

Q. Pradhan Mantri MUDRA Yojana is aimed at (2016)

- (a) bringing the small entrepreneurs into formal financial system
- (b) providing loans to poor farmers for cultivating particular crops
- (c) providing pensions to old and destitute persons
- (d) funding the voluntary organizations involved in the promotion of skill development and employment generation

Ans: (a)

Q. Disguised unemployment generally means (2013)

- (a) large number of people remain unemployed
- (b) alternative employment is not available
- (c) marginal productivity of labour is zero
- (d) productivity of workers is low

Ans: (c)

Mains

Q. Most of the unemployment in India is structural in nature. Examine the methodology adopted to compute unemployment in the country and suggest improvements. **(2023)**

PDF Refernece URL: <https://www.drishtias.com/current-affairs-news-analysis-editorials/news-analysis/26-12-2024/print>

