



18 January, 2024

Annual Status of Education Report (ASER 2023)

Context: The Annual Status of Education Report (ASER) 2023 'Beyond Basics' was released in New Delhi on January 17.

➤ ASER Overview:

- Nationwide citizen-led household survey in rural India.
- Implemented since 2005, shifted to alternate-year cycle in 2016.
- 'Basic' ASER survey includes enrollment, learning assessments, and expanded domains.

➤ ASER 2023 'Beyond Basics' Survey:

- Covered 28 districts across 26 states, targeting 34,745 youth aged 14-18.
- Explored activity, ability, and digital awareness and skills.

➤ Activity:

- 86.8% of 14-18-year-olds enrolled in educational institutions.
- Notable enrollment differences by age; 32.6% not enrolled at 18.
- Predominance of Arts/Humanities stream in higher grades (55.7% in Std XI or higher).
- Only 5.6% involved in current vocational training.

➤ Ability:

- **Foundational skills assessment:**
 - 25% struggle to read Std II level text.
 - Over half struggle with 3-digit by 1-digit division.
 - 57.3% can read English sentences; 73.5% understand their meanings.
- **Everyday calculations:**
 - 85% can measure length using a scale (from 0 cm).
 - 39% can do common calculations with a shifted starting point.
- **Financial calculations:**
 - Over 60% can manage budgets; 10% can calculate repayment.

➤ Digital Awareness and Skills:

- **Digital access:**
 - Close to 90% have smartphones; males more likely to own one.
 - Females less likely to know smartphone or computer usage.
- **Communication and online safety:**
 - 90.5% used social media; males slightly more than females.
 - About half are familiar with online safety settings, with males more aware.
- **Education and learning:**
 - Two-thirds of smartphone users engage in educational activities.
 - A quarter of non-enrolled youth also use smartphones for education.
- **Services and entertainment:**
 - Over a quarter use smartphones for online services.
 - Nearly 80% use smartphones for entertainment.

➤ Digital Tasks Assessment:

- Two-thirds of youth could bring a smartphone for assessment.
- Males (72.9%) more likely to bring smartphones than females (62%).

• Performance on digital tasks:

- 80% can find and share a video on YouTube.
- 70% can browse the internet for answers.
- About two-thirds can set alarms; over a third can use Google Maps.
- Males consistently outperform females in digital tasks.
- Proficiency in digital tasks improves with education level and basic reading skills.

National Quantum Mission

Context: In the inaugural meeting of the National Quantum Mission's Mission Governing Board (MGB), chaired by Dr. Ajai Chowdhry, discussions centered on the implementation strategy, timelines, and the establishment of the Mission Coordination Cell (MCC).

- The National Quantum Mission has a total cost of Rs. 6003.65 crore allocated from 2023-24 to 2030-31.
- Its primary objectives include strengthening quantum research in India, developing quantum-based computers, and ensuring secure quantum communication.
- The mission is under the leadership of the Department of Science & Technology (DST), with support from other departments.

➤ Mission Objectives:

- Over an 8-year period, the mission aims to develop intermediate-scale quantum computers with 50-1000 physical qubits across various platforms such as superconducting and photonic technologies.
- It intends to establish satellite-based secure quantum communications within India and globally.
- Implementation of inter-city quantum key distribution over a distance of 2000 km is a key focus.
- The mission also seeks to create a multi-node quantum network with quantum memories.

➤ Implementation and Duration:

- The Department of Science & Technology (DST) will oversee the mission's implementation under the Ministry of Science & Technology from 2023 to 2031.
- The mission seeks to seed, nurture, and scale up scientific and industrial R&D in Quantum Technology.
- Its overarching goal is to accelerate economic growth, foster innovation, and position India as a leader in Quantum Technologies & Applications.

➤ Technology Development:

- The mission includes the development of magnetometers with high sensitivity and atomic clocks for precision timing, communications, and navigation.
- It involves designing and synthesizing quantum materials like superconductors and topological materials.
- The mission aims to develop single-photon sources/detectors and entangled photon sources for applications in quantum communications, sensing, and metrology.

➤ Thematic Hubs (T-Hubs):

- Four Thematic Hubs (T-Hubs) have been established in top academic and National R&D institutes, focusing on Quantum Computing, Quantum Communication, Quantum Sensing & Metrology, and Quantum Materials & Devices.

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INFOGRAPHIC

The Four Pillars of Quantum

Most agree that there are "four pillars" of quantum technology (though some argue for five, and still others contract down to three). While often lumped together as "quantum," they have different applications and requirements, and are at different stages of technology readiness, even within each pillar.

1 Quantum Sensing and Metrology

Quantum gravimeters

- Mineral exploration and extraction
- Underground infrastructure assessment
- Earth observation and geodesy
- Archaeological surveying

How it works: The local value of gravitational acceleration, or "small g," is measured through atom interferometry or through changes in optical transitions caused by gravitational change.

Optical atomic clocks

- Satellite-free navigation
- Deep space navigation
- Precise time stamping for financial transactions
- Internet communications

How it works: Laser beams trap and interrogate precise transition of trapped atoms or ions.

Magnetometers

- Biomedical sensing, cardiology
- Magnetic surveying
- Hazard detection

How it works: Optical probing of cooled atoms or nitrogen-vacancy centers in diamond, or electrical probing of superconducting quantum interference devices.

2 Quantum Computing

- Factoring to decrypt public key encryption
- Optimization, routing, and scheduling problems
- Quantum simulation
- Drug and materials discovery
- Database searching

Approaches:

1. Trapped Ion (Cold Quanta, IonQ, Honeywell)
2. Superconducting (IBM, Rigetti, Google)
3. Photonic (Xanadu, PsiQuantum)

Further Quantumplation



Want to play around with programming a quantum computer? You can, in the cloud.

Xanadu: strawberryfields.ai

Rigetti: docs.rigetti.com/en/welcome-to-quantum-cloud-services

IonQ: ionq.com/get-started

The Quantum Market: Who's the Customer?

Right now: Governments are investing big in R&D



Future: That's the billion dollar question. Quantum technologies will have to outperform classical technologies at a comparable price point to find end users.

3 Quantum Communication

- Quantum key distribution
- Quantum internet
- Distributed quantum computing

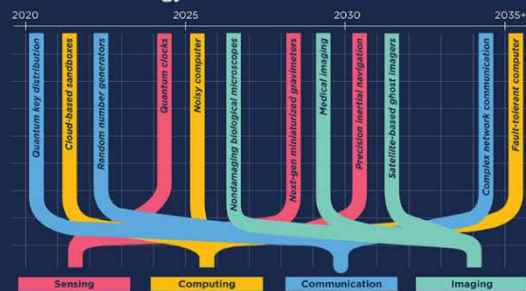
How it works: Transmission of such photons can be used to protect the integrity of data and transfer a quantum state from one place to another (Einstein's "spooky action at a distance").

4 Quantum Imaging

- Imaging through turbid media
- Stealth plane tracking
- Subwavelength imaging for medicine

How it works: Arguably the most speculative application of quantum techniques, entangled photons can be manipulated to enhance image resolution and signal-to-noise. Challenges include the difficulty in producing multiphoton entanglement and sufficient entangled flux for detection.

Quantum Technology Readiness Level



AnticipatedTRL, dates are not specific. This graphic is intended to represent general time periods anticipated for these technologies to mature. Data is from UK National Quantum Technologies Programme "A roadmap for quantum technologies in the UK" (2017).

SPIE

- These hubs are dedicated to generating new knowledge through basic and applied research and promoting R&D in their mandated areas.
- **Global Context:**
 - Research and development in quantum technologies are actively underway in the US, Canada, France, Finland, China, and Austria.
 - India aims to become the seventh country to have a dedicated quantum mission.
- **Significance and Applications:**
 - The mission positions India as a major player in quantum technology alongside global leaders.
 - It holds crucial applications in governance, industry, and military communication.
 - The mission enhances India's competitiveness in quantum communication technology, vital for cybersecurity and safeguarding critical infrastructure.
 - Applications extend to aerospace engineering, weather prediction, simulations, cybersecurity, manufacturing, health, agriculture, education, creating skilled jobs, and promoting entrepreneurship for technology-led economic growth.

World Employment and Social Outlook Trends 2024

Context: The World Employment and Social Outlook Trends 2024 report, released by the ILO, indicates that despite an increase in the workforce, the average number of working hours remains lower than pre-pandemic levels.

- **Global Employment Scenario:**
 - Global unemployment reached its lowest level in 2023 since the onset of the pandemic as economies and workplaces reopened.
 - Working poverty rates and informality have approached pre-pandemic levels, according to the International Labour Organization (ILO).
- **Workforce Dynamics Post-Pandemic:**
 - Despite an increase in the workforce, the average number of working hours is often lower than pre-pandemic levels.
 - The World Employment and Social Outlook Trends 2024 report by ILO, released on January 10, 2024, highlights this trend.
- **Total Working Hours Trends:**
 - The total number of working hours increased globally between 2019 and 2023 due to strong post-pandemic employment growth.
 - However, the difference between average and total hours worked grew, indicating a decrease in optimal worker utilization.
- **Factors Contributing to Reduced Hours:**
 - Average weekly hours per worker were lower in 2023 compared to 2019 across all income groups, except for a slight increase in low-income countries.
 - The percentage decrease in average hours worked in upper-middle-income countries was less than 1%, and over 2% in high-income and lower-middle-income countries.

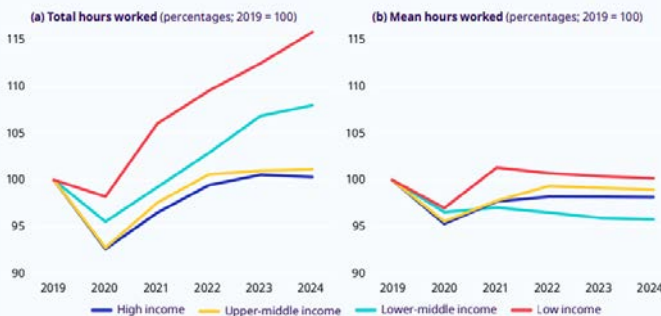
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► **Figure 3.6. Total hours versus mean hours actually worked per employed person**



Note: These indicators are based on the 13th ICLS definition. They refer to mean weekly hours actually worked per employed person and total weekly hours actually worked by employed persons in their main job. More information can be found in the ILO Modelled Estimates (ILOEST) database description (<https://ilostat.ilo.org/resources/concepts-and-definitions/ilo-modelled-estimates/>).

Source: ILOSTAT, ILO modelled estimates, November 2023.

- Reasons for the reduction include an increase in part-time employment due to care duties, health reasons, and long-term health problems.

► **Impact of Long COVID:**

- The World Health Organization (WHO) defines Long COVID as a debilitating post-infection multi-system disease affecting anyone exposed to SARS-CoV-2.
- Long COVID contributes to an increase in sick days per person, leading to decreased mean working hours.
- Deteriorated health post-pandemic, attributed to Long COVID, is a significant factor in reducing mean working hours.

► **Global Scale of Long COVID:**

- WHO estimates that about 20% of individuals affected by COVID-19 experience Long COVID, influencing labor market metrics.
- As of March 5, 2023, approximately 1.9 million people in the UK alone were living with Long COVID.
- Scientific studies worldwide, including the United States and Africa, highlight lasting symptoms and implications for day-to-day activities, including work.

► **Economic Implications and Sectors Affected:**

- Research indicates that Long COVID significantly influences labor market activity metrics, resulting in reduced working hours.
- In the US, people with Long COVID in the labor force reduced their average hours of work, leading to a loss of full-time equivalent workers.
- Sectors experiencing substantial drops in mean hours worked include accommodation and food services, transportation and storage, information and communications, real estate, and professional, scientific, and technical activities.

► **Ongoing Challenges and Estimations:**

- Despite efforts to move on from the acute phase, at least 65 million people are estimated to struggle with Long COVID, according to a study published in Nature in January 2023.
- Long COVID cases are increasing daily, posing ongoing challenges to workforce dynamics and global economic recovery.

NEWS IN BETWEEN THE LINES

Karbi Youth Festival



Recently, the President of India graced the golden jubilee celebrations of the Karbi Youth Festival at Taralangso near the Karbi Anglong district headquarters of Diphu in Assam.

About Karbi Youth Festival:

- The Karbi Youth Festival (KYF) is a **yearly festival** that celebrates the cultural heritage of the Karbi people.
- The festival is considered the oldest ethnic festival in India.
- The festival began in the early **1980s** and is a model for other ethnic tribes to preserve and promote their cultural identity.
- The festival aims to preserve and promote traditional games like **Hambi Kepathu**, a game played with dried seeds.
- The **Karbi people** are the main tribe of Karbi Anglong and West Karbi Anglong districts of Assam.
- The Karbi Youth Festival is the oldest and biggest ethnic festival of Northeast India, celebrated primarily by the Karbi and other ethnic communities inhabiting the areas administered by the Karbi Anglong Autonomous Council (KAAC).
- In order to mark the golden jubilee of the festival in a befitting manner, the organizers have extended the duration of the annual event from the usual five days to eight days.

Jalikkattu



Recently, the two spectators, including a minor boy, were gored to death by bulls near the venue of a bull-taming event, Jalikkattu held at Siravayal village in Sivaganga district of Tamil Nadu.

About Jalikkattu:


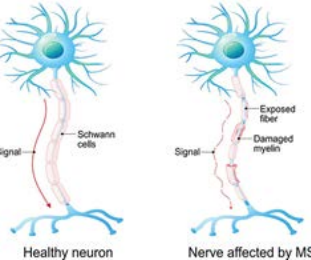

- Jalikkattu, also known as **eruthazhuvuthal** or **manju virattu** is a **traditional bull-taming sport** celebrated during the **Pongal** harvest festival in **Tamil Nadu**.
- The name comes from the words **Jalli (silver and gold coins)** and **Kattu (tied)**.
- In **2014**, the Supreme Court banned Jalikkattu and Bullock Cart Race, stating they violated provisions of the **Prevention of Cruelty to Animals Act, 1960**.
- In **2015**, the Supreme Court dismissed Tamil Nadu's plea to recall the ban, leading to massive protests in January 2017.
- In **2016**, **MoEF&CC** (the Ministry of Environment, Forest and Climate Change) issued a notification prohibiting bull exhibition but allowed an exception for events like Jalikkattu.

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	<ul style="list-style-type: none"> The Tamil Nadu Assembly passed the "Prevention of Cruelty to Animals (Tamil Nadu Amendment) Act 2017," exempting Jallikattu. The Supreme court ruled that the 2017 amendment does not violate Fundamental Duties (Articles 51-A (g) and 51-A (h)) and Fundamental Rights (Articles 14 and 21) of the Constitution. In 2018, a two-judge bench referred the petitions challenging the 2017 amendment to a larger bench, framing five questions for adjudication.
<p>Monocropping</p> 	<p>Recently, a study in Telangana revealed that the surface irrigation may encourage monocropping.</p> <p>About Monocropping:</p> <ul style="list-style-type: none"> Monocropping is an agricultural practice that involves growing a single crop on the same land year after year. It is also known as sole cropping or monoculture. Some examples of monocropping crops include: Corn, Soybeans, Wheat, etc. Monocropping boosts yields as farmers focus on specific crops like corn, rice, soybeans, and wheat, ensuring they flourish in any planting location. Some disadvantages of monocropping include challenges in maintaining soil cover, promoting pests and diseases, reducing soil fertility, necessitating chemical fertilizers, and demanding extensive water for irrigation. Monocropping, particularly in states like Punjab, Haryana and Telangana, has led to groundwater depletion and nutrient soil deficiency.
<p>Multiple Sclerosis</p> 	<p>DNA obtained recently from bones and teeth of ancient Europeans, dating up to 34,000 years ago, revealed insights into the origin of multiple sclerosis.</p> <p>About Multiple Sclerosis:</p> <ul style="list-style-type: none"> Multiple Sclerosis is a chronic neurological disease affecting the brain and spinal cord, characterized as an autoimmune disorder where the body mistakenly attacks itself. There are three main types of Multiple Sclerosis including Relapsing, Primary progressive and Secondary progressive. Four disease courses have been identified in Multiple Sclerosis including, Clinically isolated syndrome (CIS), Relapsing-remitting MS (RRMS), Primary progressive MS (PPMS) and Secondary progressive MS (SPMS). Symptoms vary widely, depending on the location and severity of nerve fiber damage in the central nervous system, with some experiencing mild signs like blurred vision, numbness and limb tingling.
<p>Place in News</p> <p>Greenland</p>	<p>Recently, th NASA's Jet Propulsion Laboratory revealed that the climate change has caused Greenland's ice sheet to lose 20% more ice than previously thought.</p> <p>Greenland (Capital: Nuuk)</p> <p>Location: Greenland, a part of Denmark is the world's largest non-continental island country located between the Arctic and Atlantic oceans.</p> <p>Physical Features:</p> <ul style="list-style-type: none"> Northeast Greenland National Park is the world's largest national park situated in Greenland. Greenland's ice sheet is the world's second largest ice sheet after Antarctica. Nearly 75% of Greenland is covered by a permanent ice sheet. Ilulissat Icefjord, located on the west coast of Greenland, is a UNESCO World Heritage Site known for its breathtaking ice formations. Greenland has vast mineral wealth, including deposits of rare earth elements, minerals and hydrocarbons. 

POINTS TO PONDER

- Who is the author of the book 'Fertilising the Future: Bharat's March Towards Fertilizer Self-Sufficiency' recently released by the Vice President of India? - **Dr. Mansukh Mandaviya**
- According to Lord Buddha, what does 'भवतु सब्ब मंगलम' mean? - **Blessings, compassion, and welfare of all**
- What does DPIIT stand for in the context of startup regulation? - **Directorate of Promotion of Industry and Internal Trade**
- Which states are mentioned as major tobacco-producing states in India? - **Gujarat, Andhra Pradesh, Uttar Pradesh, Karnataka, West Bengal, Telangana and Bihar**
- What socio-economic status is attributed to the Kolam tribes in Maharashtra and Andhra Pradesh? - **Scheduled Tribes**

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