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Headlines

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Education without employment - Page No.8 , GS 3

Ecology is the world's permanent economy - Page No.8 , GS 3

Irrigation problems - Page No.9 , GS 3

Spurious liquor - Page No.12 , GS 2

Retail inflation - Page No.15 , GS 3

Text and Context - Right to repair

Join me on Telegram :- Prashant Tiwari

Username:- UPSCwithPrashant

“

We will fail when
we fail to try.

ROSA PARKS

21 dead, 10 critical in Amritsar after drinking spurious liquor

Police arrest 10 persons in connection with the incident; Punjab govt. announces ₹10 lakh each to the kin of the deceased; police probe reveals methanol was used in manufacturing the spurious liquor and the main accused procured it online

Ishita Mishra
AMRITSAR

As many as 21 people between 26 and 80 years of age died and 10 have been hospitalised in critical condition after they consumed spurious liquor in Majitha in Amritsar district of Punjab on Tuesday, the police said.

The deaths have been reported in Patalpuri, Karnala, Marari Kalan, Bhangali, and Therewal villages in the intervening night between Monday and Tuesday.

The district administration deployed medical teams, which went door-to-door in the affected villages to check on people suspected to have consumed the brew.

Preliminary investigation revealed that methanol was used in manufacturing the alcohol that took the lives and that the main accused in the spurious liquor trade, Sahib Singh, procured it online.

"We have arrested 10 persons, including the kingpin of the racket along with several local distributors in connection with the illicit liquor trade and the main suppliers of methanol – a fatal chemical used



In tears: Relatives grieve after the death of a man who consumed spurious liquor at Majitha village on the outskirts of Amritsar in Punjab on Tuesday. ANI

in industrial products," said Director-General of Police (DGP) Gaurav Yadav.

DSP, SHO suspended

The DGP said Majitha Deputy Superintendent of Police Amolak Singh and Station House Officer Avtar Singh have been suspended for gross negligence in discharging duties, which resulted in the fatal incident. Departmental inquiries have been initiated against them.

Senior Superintendent of Police (SSP), Amritsar

(Rural), Maninder Singh said that local distributor Prabhjeet Singh had received methanol filled in 50-litre jerry cans from kingpin Sahib Singh. During questioning, the latter revealed that he ordered methanol from a Ludhiana-based chemical firm, Sahil Chemicals, via an online platform, he said.

The probe revealed that another consignment of methanol ordered by Sahib Singh from a Delhi-based firm is in transit, the officer added. Excise and Police

teams have been dispatched to retrieve and seize the consignment as soon as it arrives.

'Won't spare killers'

Punjab Chief Minister Bhagwant Mann said those responsible for the deaths would not be spared. He stressed that such crimes could not be carried out without the political patronage of powerful politicians, and added that this angle was being investigated. "These are not deaths but murders," he said.

He added that links to this illicit liquor nexus had been traced up to Delhi and every person involved in this crime would be put behind the bars. He compared the Amritsar spurious liquor tragedy with that of Taran Taran, and added that the pattern of deaths was similar.

The Chief Minister announced a compensation of ₹10 lakh each to the families of the deceased.

In 2020, a total of 120 people died after consuming spurious liquor in Tarn Taran, Amritsar and Batala. In March 2024, some 20 people died after consuming spurious liquor in Sangrur.

The Opposition parties lashed out at the Aam Aadmi Party (AAP) government and the CM for "failing" to control the liquor mafia.

"In August 2020, when deaths occurred due to illicit liquor in Tarn Taran, Amritsar and Gurdaspur districts, you demanded an FIR under Section 302 against the then Excise Minister... Will you now take the resignation of Excise Minister Harpal Cheema? Will you now file an FIR under Section 302 against him?" the Punjab Congress wrote on its X handle.

Page No. 12, GS 2

Content.

- As many as 21 people between 26 and 80 years of age died and 10 have been hospitalised in critical condition after they consumed spurious liquor in Majitha in Amritsar district of Punjab on Tuesday, the police said.
- The district administration deployed medical teams, which went door-to-door in the affected villages to check on people suspected to have consumed the brew.
- Preliminary investigation revealed that methanol was used in manufacturing the alcohol that took the lives and that the main accused in the spurious liquor trade, Sahib Singh, procured it online.

Fact

- Ethanol is the type of alcohol commonly found in alcoholic beverages and is the psychoactive ingredient responsible for the effects of intoxication.
- Ethanol (C_2H_5OH) is a compound consisting of two carbon atoms, six hydrogen atoms, and one hydroxyl group (OH^-).
- Liquor is differentiated by its alcohol content. It ranges from 5% in beer to 40% in distilled spirits such as vodka and whiskey.
- Inside the body, ethanol is metabolised in the liver and the stomach by alcohol dehydrogenase (ADH) enzymes to acetaldehyde.
- Then, aldehyde dehydrogenase (ALDH) enzymes transform the acetaldehyde into acetate.

Fact

Spurious Liquor:

- It is a fake or counterfeit alcohol that is often made at home.
- In this methanol is added to make the alcohol stronger in terms of its intoxicating effects or to increase the quantity of the liquor being produced. It is a harmful substance that can be dangerous if consumed in high amounts.
- Hooch production carries inherent risk due to the presence of toxic methanol in the distilled fermented mixture, alongside consumable ethanol.
- The Food Safety and Standards (Alcoholic Beverages) Regulations 2018 prescribe the maximum permissible quantity of methanol in different liquors.
- These values span a wide range, including “absent” in coconut fenny, 50 grams per 100 litres of country liquor, and 300 grams per 100 litres of pot-distilled spirits.

- Methanol, chemically represented as CH₃OH, is a simple alcohol molecule consisting of one carbon atom bonded to three hydrogen atoms and one hydroxyl group (OH).

Regulations:

- Methanol is classified under Schedule I of the Manufacture, Storage and Import of Hazardous Chemical Rules 1989 in India.
- Indian Standard IS 517 specifies how the quality of methanol should be determined.

Industrial Production:

- Methanol is primarily produced industrially by combining carbon monoxide and hydrogen in the presence of copper and zinc oxide catalysts, typically at pressures of 50-100 atm and temperatures around 250°C.
- Historically, methanol was also produced through the destructive distillation of wood, a method known since ancient times, including in ancient Egypt.

Industrial Uses:

- Methanol serves as a crucial precursor in the production of acetic acid, formaldehyde, and various aromatic hydrocarbons. It is widely used as a solvent, antifreeze, and in various industrial processes due to its chemical properties.

- Methanol in the body is broken down into toxic byproducts, primarily formic acid. This acid disrupts the body's delicate pH balance in the blood, leading to a condition called metabolic acidosis (production of excessive acid that cannot be flushed out by kidneys).
- This makes the blood more acidic, hindering its ability to function properly.
- **Cellular Oxygen Deprivation:**
- Formic acid also interferes with an enzyme called cytochrome oxidase, which is crucial for cellular respiration. This disrupts the cells' ability to use oxygen, leading to a buildup of lactic acid and further contributing to acidosis.
- **Vision Impairment:**
- Methanol can damage the optic nerve and retina, causing methanol-induced optic neuropathy. This condition can lead to permanent vision problems, including blindness.
- **Brain Damage:**
- It can cause cerebral edema (fluid buildup in the brain) and hemorrhage (bleeding). These can lead to coma and death.

Fact

- In India, attempts at prohibition have been influenced by the thinking of Mahatma Gandhi, who viewed alcohol consumption more as a disease than a vice.
- Following India's independence, Gandhians continued to push for a liquor ban.
- These efforts led to the inclusion of Article 47 in the Constitution.
- Several Indian states have enacted bans on alcoholic beverages.
- For example, Haryana made several attempts at prohibition but was forced to abandon the policy due to the inability to control illicit distillation and bootlegging, which also resulted in many deaths.

UPSC IAS

PRELIMS TO INTERVIEW (P2I)

FOUNDATION

MAY EVENING BATCH

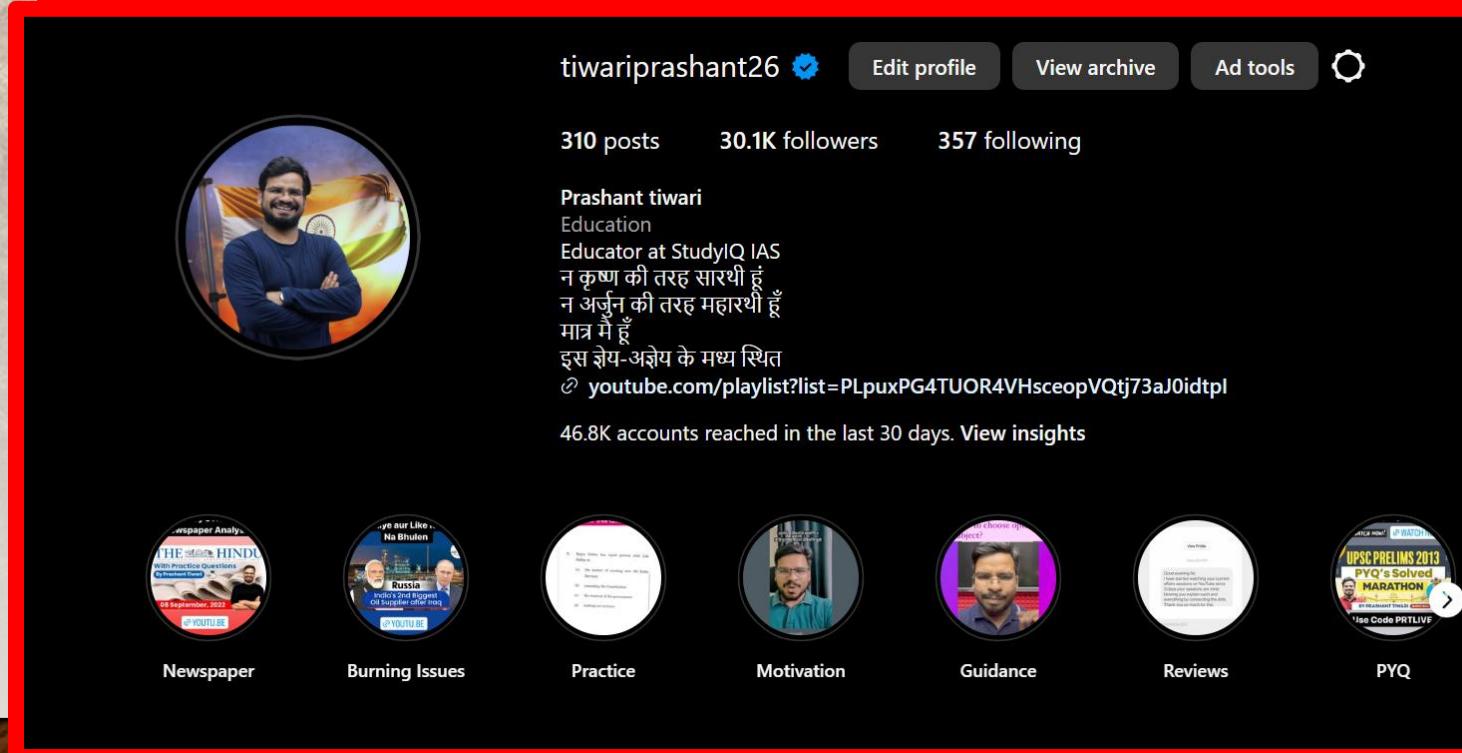
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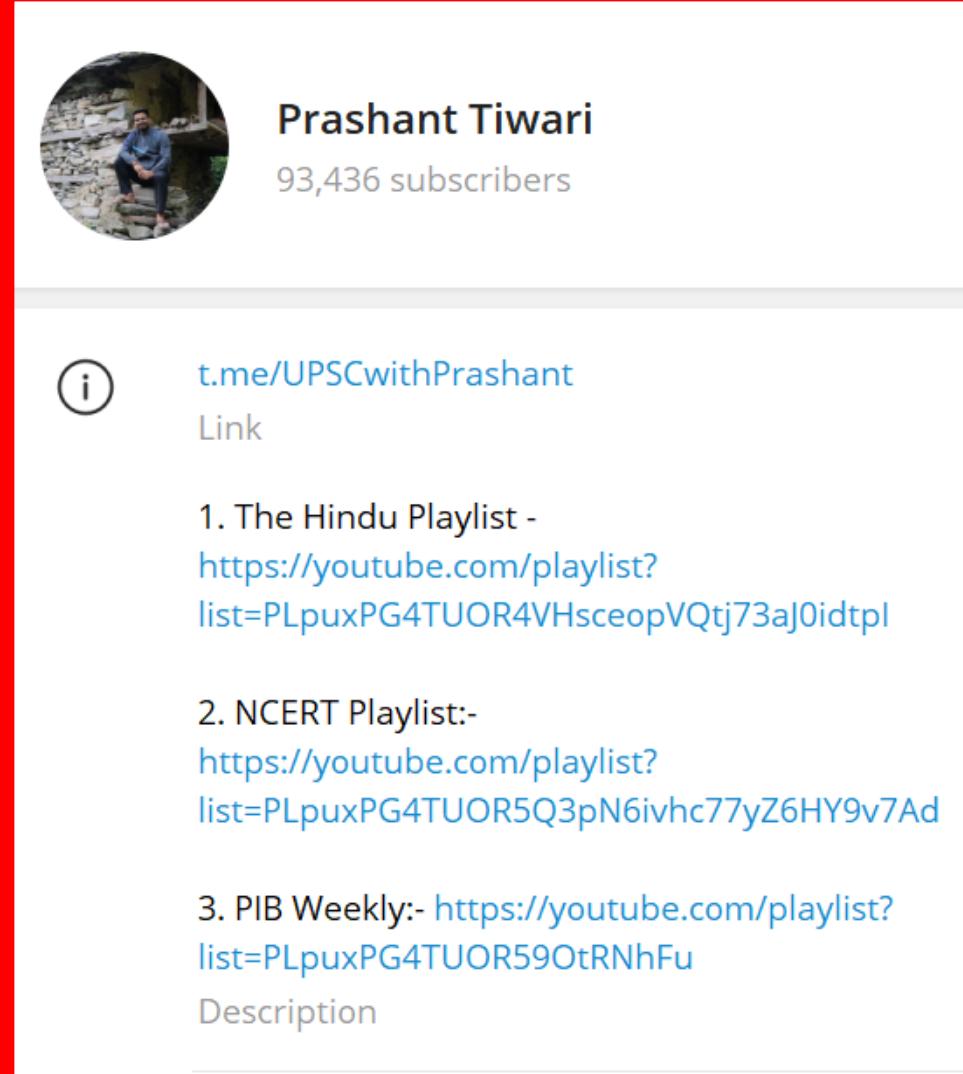
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Prashant tiwari
Educator at StudyIQ IAS
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Description

Retail inflation slows to 3.16% in April, lowest in 69 months

Page No. 12, GS 3

The fall in prices has been driven in large part by sharply easing food prices, especially those of vegetables and pulses.; inflation in food and beverages slows for sixth consecutive month to 2.14%

T.C.A. Sharad Raghavan

NEW DELHI

Retail inflation in India cooled for the sixth consecutive month in April 2025, coming in at 3.16%, the lowest it has been in 69 months. The fall in prices has been driven in large part by sharply easing food prices, especially those of vegetables and pulses.

The monthly Consumer Price Index released by the Ministry of Statistics and Programme Implementation stood at 3.34% in March 2025, and had been

Price relief

The fall in prices has been driven in large part by sharply easing food prices



SOURCE: MOSPI

falling consistently since October 2024, when it had hit a 14-month high of 6.21%. April's inflation figures are the lowest since

July 2019. The data shows that inflation in the food and beverages category slowed for the sixth consecutive month to 2.14%,

with vegetable prices contracting 10.98%, pulses contracting 5.23%, and meat and fish prices contracting 0.35% over their levels in April last year.

Vegetable prices have been on a downward trend for a little while now, with April's data marking the third consecutive month of price contractions.

However, while prices have been cooling, a large part of this contraction has to do with a high base effect, since vegetable inflation was in the 27-30% range in the February-April period last year.

Content.

- Retail inflation in India cooled for the sixth consecutive month in April 2025, coming in at 3.16%, the lowest it has been in 69 months. The fall in prices has been driven in large part by sharply easing food prices, especially those of vegetables and pulses.**

Criteria	Wholesale Price Index	Consumer Price Index (CPI)
Level	Measures Inflation at Wholesale level	Measures Inflation at Retail level
Who Calculates?	Office of Economic Advisor, Ministry of Commerce and Industry	National Statistical Office, MoSPI
Base year	2011-12	2012

Categories and their respective weightages	Primary Articles: (22.6%)Manufactured products (64.2%)Fuel and Power (13.2%)	Food and beverages (45.86%)Pan, Tobacco and Intoxicants (2.38%) Clothing and Footwear (6.53%)Housing (10%) Fuel and Light (6.84%): Electricity, LPG, Kerosene etc. (Does not include Petrol and Diesel)Miscellaneous- Education, Healthcare, Transportation and Communication etc. (28.32%)
Weightage given to Food Articles	WPI-Food Index (24%): Food articles from "Primary Articles" and "Manufactured Food Product".	Consumer Food Price Index (CFPI): (39%): Out of 12 sub-groups contained in 'Food and Beverages' group, CFPI is based on ten sub-groups, excluding 'Non-alcoholic beverages' and 'Prepared meals, snacks, sweets etc. (For Details, refer to Rau's Economic Survey Video)
Impact of increase in Food items	Less impact on WPI as compared to CPI	Larger impact on CPI

Weightage of Fuel and Power	Included in separate category of Fuel and Power (13.2%)	Weightage (~8%): Included in (a) category of Fuel and light and (b) Category of Transportation and Communication (Fuel for Transportation)
Highest Weightage	Manufactured products (64.2%)	Food and Beverages (45.9%)
Services included	No	Yes
Indirect Taxes Included?	No	Yes
Targeted by RBI?	No	Yes. The RBI is required to maintain CPI rate of inflation of 4% with a deviation of 2%.

What is the Monetary Policy Committee (MPC)?

- **Origin:** Under Section 45ZB of the amended (in 2016) RBI Act, 1934, the central government is empowered to constitute a six-member Monetary Policy Committee (MPC).
- **Objective:** Further, Section 45ZB lays down that “the Monetary Policy Committee shall determine the Policy Rate required to achieve the inflation target”.
- The decision of the Monetary Policy Committee shall be binding on the Bank.
- **Composition:** Section 45ZB says the MPC shall consist of 6 members:
 - RBI Governor as its ex officio chairperson,
 - Deputy Governor in charge of monetary policy,
 - An officer of the Bank to be nominated by the Central Board,
 - Three persons to be appointed by the central government.
 - This category of appointments must be from “persons of ability, integrity and standing, having knowledge and experience in the field of economics or banking or finance or monetary policy”.

The right to repair movement in India

What is the Repairability Index? What does 'planned obsolescence' with respect to electronics mean? How different is the right to repair movement in the U.S. as compared to India? How are consumer advocates and electronic manufacturers responding to the Index?

EXPLAINER

Aroon Deep

The story so far:

The Department of Consumer Affairs (DoCA) last week announced that a report for a "Framework on Repairability Index (RI) in Mobile and Electronic Sector" had been submitted to the government. Under the RI, consumer electronics and electronic appliances would be assigned a score depending on how easy they are to repair by evaluating products under criteria like availability of spare parts, cost of repair, software updates, and availability of information.

Why a focus on repairing products?

The home appliance industry is full of examples of products like washing machines and air conditioners which if purchased several years ago work for a long time without any problems, while the newer ones face frequent failures. While "planned obsolescence" – selling consumers less durable products intentionally so that they come back to buy a newer model – is often cited as a reason for this, there is often a simpler reason: companies are cutting corners on raw materials and manufacturing, under the strain of increasing metal costs and price competition.

Attero Recycling CEO Nitin Gupta said in an interaction with *The Hindu* in 2023 that the "amount of metal content on [appliance] units" had come down, and that shortages in materials like copper have led to leaner engineering choices. India is a net importer of metals, Mr. Gupta said, increasing pressures to maintain existing electronic products.

These developments have made repair a much bigger issue in many electronics, and a looming factor for consumers to consider when purchasing a product. This isn't a uniquely Indian problem. U.S. lawmaker Marie Gluesenkamp Perez recently described a draft law she had



GETTY IMAGES

introduced requiring appliance makers to display average annual maintenance and repair costs alongside the price of a product, and said that longer-lasting older appliances (and potentially newer ones built to last) like washing machines were a form of "durable wealth" as they last longer. Prolonging the life of an appliance ties into other priorities, like promoting e-waste recycling (part of what Indian officials have described as a "circular economy," where parts and metals go back into a value chain, a long-held but inadequately achieved aim), and regulating the demand for "virgin" metals that have been freshly mined.

The main impetus, however, is likely the end-consumer benefit of having

longer-lasting products. Since the processing power of smartphones and computers in particular have not grown as much in recent years as in the 2010s, ecological and economic imperatives align on making sure that consumers have products that last, or at least products that can be repaired cheaply and quickly.

What is the right to repair?

Consumer groups around the world have been fighting for the right to repair, a broad umbrella term referring to greater flexibility for a consumer in terms of how they can get their products repaired. In India, the DoCA has launched a right to repair portal, which lists the authorised service centres of various manufacturers

and repair literature published by them.

This is a non-confrontational interpretation of the right to repair. In the U.S., consumer groups have rallied around the term to resist companies that seek to monopolise the repair of their products, such as by restricting access to spare parts, and penalising customers who choose third party repair services. Protections for such customers have emerged from the American right to repair movement, but the Indian interpretation aligns closely with equipment manufacturers' insistence that the availability of authorised service channels are sufficient.

With the RI framework, the government indicated that it would work to pursue such scoring "without causing any impediment to the industry with regard to innovation and ease of doing business". Electronics makers have strenuously fought some right to repair legislations in the U.S., cautious of the business impact of losing repair revenue, which has emerged as a key revenue stream in some sectors. McDonald's ice cream machines are a commonly cited example, as they break down frequently and franchisees have only been permitted to have them repaired by technicians of the Taylor Company, which makes the machines.

The committee that drafted the RI framework was dominated in membership by industry groups and electronics manufacturers. However, that does not mean that the deliberations and the report's outcome will completely favour them, like the right-to-repair portal did. Pushpa Girimaji, a consumer rights advocate and lawyer who has closely tracked the intricacies of the right to repair, was part of the committee; Ms. Girimaji recently described a manufacturer's refusal to offer repair on an aging lift as "highly exploitative and a violation of the consumers' right to choice," and hit many of the key notes that consumer advocates elsewhere have advocated for, including accommodation of third party repair services.

THE GIST

Under the Repairability Index, consumer electronics and electronic appliances would be assigned a score depending on how easy they are to repair.

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- While “planned obsolescence” — selling consumers less durable products intentionally so that they come back to buy a newer model — is often cited as a reason for this, there is often a simpler reason: companies are cutting corners on raw materials and manufacturing, under the strain of increasing metal costs and price competition.
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- In the U.S., consumer groups have rallied around the term to resist companies that seek to monopolise the repair of their products, such as by restricting access to spare parts, and penalising customers who choose third party repair services.

In India, education without employment

In defending the educational policies of the present government, it has been claimed that education has been freed from the shackles of previous governments: Atal Tinkering Labs, coding right from middle school, the recruitment of Scheduled Caste/Scheduled Tribe teachers, and the empowerment of Muslim girl students. But primarily, it is stated that the National Education Policy (NEP) 2020 "will enable an educational renaissance".

In all these utterances, the seminal point that is forgotten is that our educational system remains clueless about the shape-shifting marketplace – namely, the employability of our graduates as a workforce.

Education has many purposes. It enables, it enervates and elevates. As Vivekananda said, education empowers one to stand on one's own feet. After 75 years of foolishly gambling excellence for equity, India has squandered both. Young people are unable to find meaningful employment that is commensurate with any training that they may have received. The degrees they have are not worth the paper on which they are printed.

It is irrelevant that these problems were created or ignored by the Congress pot or the Bharatiya Janata Party kettle. The present lawfully elected government has the responsibility to cleanse these Augean stables. Never mind that the NEP 2000 is the fourth such document that was supposed to do this after the Radhakrishnan Commission (1948), the Kothari Commission (1966) and the Officers' Commission (1985).

A good education is one with an optimum of depth and breadth. Depth alone imparts the technical expertise for employability. Breadth provides flexibility in a rapidly changing Artificial Intelligence-driven ecosystem, where those in the job market need to constantly re-train themselves to avoid extinction.

A high rate of educated unemployment
There is barely any evidence, four years on, that any of the NEP recommendations have been put into effect. In 2025, India's overall graduate employability rate is 42.6%, which is practically the same as the 44.3% of 2023. Similarly, knowledge-intensive employment in the year 2023 only stands at 11.72%. Multiple entries and exits, a hallmark of NEP, have only created low-quality and poorly paying e-commerce jobs.

The high rate of educated unemployment today shows that education in India is actually disempowering students. The NEP is a retreat to the Vannevar Bush model of the mid-20th century U.S. without its financial cushioning. The NEP is outdated and financially unviable in the India of 2025. With lip service paid to 'new' ideas such as Indian Knowledge Systems (IKS), mother



**Gautam R.
Desiraju**

is Professor Emeritus,
Indian Institute of
Science and
Distinguished
Professor, UPES
Dehradun, with a
citations-to-
publications ratio
of 102.5



Mirle Surappa

is INSA Senior
Scientist at the
National Institute of
Advanced Studies,
former
Vice-Chancellor, Anna
University, former
Director, IIT Ropar
and former Dean,
Indian Institute
of Science

tongue learning, changing history textbooks, flexible curricula and a complete absence of methodology to effect its recommendations, the NEP is a dead fish in the water. It depends on course choice alone to correct imbalances, notwithstanding that the course content itself may be unworkable. It is noteworthy that there was not a single member from industry or the business sectors in the committee that drafted the NEP.

A good university seamlessly integrates breadth with depth. It is claimed that there has been a remarkable improvement from the past in that 11 Indian universities are ranked in the top QS World University Rankings (WUR) 500, clearly echoing the selective narrative of Nunzio Quacquarelli, CEO of QS, who was generous in his praise of India, while releasing WUR 25. Mr. Quacquarelli quoted the 318% increase in the performance of Indian universities, as the highest growth among the G-20 nations, quietly avoiding mention of both India's low ranking (above 100) and low publication quality. To wit, India's Category Normalized Citation Impact (CNCI) rank (an indicator of publications quality) during 2008-19 which was 17th among 19 countries in the G-20, inched up admirably to 16th position in 2024. Such 'increases' have been touted by the Ministry in its Press Information Bureau press release of February 13, 2025. It has also been claimed that this is the year when Indian universities showcased the highest performance improvement among all G-20 nations. It is unbelievable that in this digital era, the government has failed to recognise and understand the commercial implications of QS, THE and similar agencies and the reasons for their skewed and deceptive analyses.

A missing transparency on projects
Mega research projects were carried out with great fanfare and amidst a media blitz in the past. These included the New Millennium project (CSIR-NMITL), the \$10 Akash tablet project, and the IMPRINT (IMPacting Research INnovation and Technology) project (MHRD).

These projects were in the limelight for years, but the public is not aware of the emergence of the intended products or processes from these projects, on which hundreds of crores of taxpayer money has been spent. It does not matter whether these projects were initiated or shut down by the Congress or the BJP. What we, as taxpayers, want to know is if these projects were value for money.

India's Global Innovation Index (GII) represents the innovation capabilities of India. Our ranks in 2014, 2015 and 2024 were 76, 81, and 39. Malaysia and Türkiye lead India in GII with ranks of 33 and 37, respectively. The GII reveals

the world's top S&T clusters in two innovation metrics: published patent applications and published scientific articles. India has four clusters with ranks of 56 (Bengaluru), 63 (Delhi), 82 (Chennai) and 84 (Mumbai). The Bengaluru cluster is often touted as an unparalleled rival to Silicon Valley, particularly with respect to the numbers of startups and Unicorns. However, its 56th rank needs to be compared to the sixth-ranked Silicon Valley cluster. In terms of cluster intensity of the top 100, Bengaluru at 94 followed by Chennai at 96, Delhi at 98, and Mumbai at 99 pale in comparison to San Jose-San Francisco (Silicon Valley) at 2 and Cambridge at 1. The number of Patent Cooperation Treaty (PCT) applications per capita and scientific publications per capita for the Silicon Valley cluster are 7885 and 9211, respectively. The corresponding numbers for the Bengaluru cluster are 313 and 1077. Samsung Electronics (South Korean) is the leading patentee in Bengaluru. No further comment is necessary.

The subject of start-ups

There is no point talking about start-ups, when we do not know what they mean. Start-ups in China, the U.S. and Israel tackle semiconductor technology, how to refine rare earth elements with ecological sensitivity and how to make metformin cheaper. In contrast, our government lauds new apps that hawk food products. India cannot have start-ups without indigenous technology. It cannot have indigenous technology without indigenous science. It cannot have indigenous science without indigenous quality education, sans political agendas. Two-wheeler *kiranas* are not startups.

Contrary to the thinking of the Education Ministry, the University Grants Commission (UGC) remains an instrument of control. It always has been and there is no justification for this antediluvian organisation to have both regulatory and financial control over universities. Can the UGC present a single piece of hard data showing that changes in pedagogy and syllabus have had a positive effect? In other words, how relevant are these changes, if any, to industry, skilling, and employability? India would probably be better off if the UGC was shut down. Sitting UGC chairs, vice-chancellors, directors and ministers need not appear in national dailies peddling their policies and propaganda ad nauseam. Their job is to execute policy, not talk about it, and to ensure decent employability for the youth. It is our job, as independent academics, to write in the newspapers, if they do not do their job.

"When stupidity is considered patriotism, it is unsafe to be intelligent" – Isaac Asimov

Page No. 8, GS 3

Content.

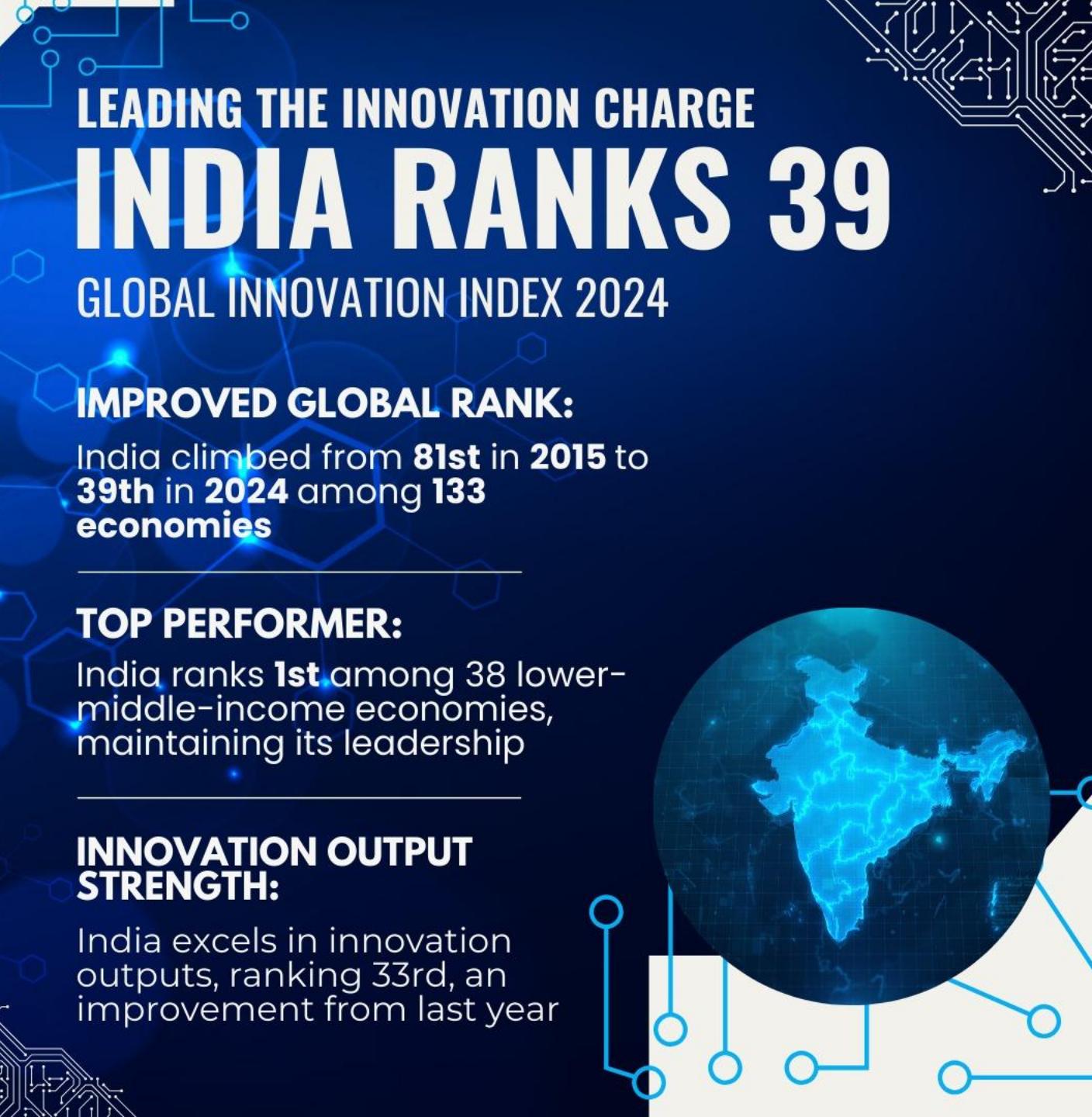
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Fact

- The Global Innovation Index serves as a key reference for evaluating the performance of an economy's innovation ecosystem.
- It is published annually by the World Intellectual Property Organization (WIPO) and acts as a valuable benchmarking tool for policymakers, business leaders, and other stakeholders.

World Intellectual Property Organization (WIPO):

- It serves as the global forum for Intellectual Property (IP) services, policy, information, and cooperation.
- It is a self-funding agency of the United Nations, comprising 193 member states.
- The organisation aims to develop a balanced and effective international IP system that fosters innovation and creativity for everyone's benefit.
- WIPO's mandate, governing bodies, and procedures are outlined in the WIPO Convention, which was established in 1967.



LEADING THE INNOVATION CHARGE

INDIA RANKS 39

GLOBAL INNOVATION INDEX 2024

IMPROVED GLOBAL RANK:

India climbed from **81st** in **2015** to
39th in **2024** among **133 economies**

TOP PERFORMER:

India ranks **1st** among 38 lower-middle-income economies, maintaining its leadership

INNOVATION OUTPUT STRENGTH:

India excels in innovation outputs, ranking 33rd, an improvement from last year



Ecology is the world's permanent economy

Page No. 8, GS 3

The phrase, “Ecology is the permanent economy”, made popular by environmentalist Sunderlal Bahuguna, is much more than a slogan. It is a profound reminder of the foundational truth that human prosperity is inextricably linked to ecological health. It is true that economic development without exploiting natural resources and economic stability without conserving them are impossible. As we face serious challenges such as climate change and the rapid loss of biodiversity, we must ask ourselves whether we have truly understood and embraced this idea.

Striking the right balance

Understanding nature’s complexity is at the heart of science. In this pursuit, humans have made tremendous efforts through observation, experimentation, and modelling, as this understanding is crucial for addressing environmental challenges such as climate change and for informing sustainable practices. While these scientific discussions are valuable, there is an even more urgent and fundamental truth we need to focus on: ecology is the real economy – our survival, security and progress depend on it. In simple terms, this might be the clearest way to define sustainability – finding the right balance between protecting the environment and supporting economic development. Without this balance, neither the environment nor the economy can thrive in the long run.

Despite being part of the animal kingdom, human evolution, through the course of civilisation, has led to a growing disconnection from nature. This disconnection with nature has been identified as a reason for the ongoing biodiversity loss (the recent Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services or IPBES Transformative Change report).

In the early stages of human history, a nomadic lifestyle compelled individuals to rely on and exploit natural resources solely for their basic, day-to-day survival needs. Over time, this



P. Ragavan

is a scientist with an interest in taxonomy, ecology and the biogeochemistry of mangroves and seagrasses. He is working on the conservation and management of mangroves and carbon dynamics in the blue carbon habitats of India

individual-centric resource use evolved into collective consumption aimed at meeting the needs of growing communities. As human societies expanded and organised themselves into nations, this demand scaled further to cater to the needs of entire countries. Eventually, this progression gave rise to global competition, where nations began to exploit nature not only to satisfy present demands but also to secure resources for future development. Unlike humans, no other species in the animal kingdom exhibits this pattern of large-scale, anticipatory exploitation of natural resources. Other animals live in harmony with their environments, taking only what they need for immediate survival, without disturbing the long-term balance of the ecosystems they inhabit.

New complications

The ever-intensifying cycle of human consumption and global competition has placed an unprecedented strain on the planet’s ecosystems and significantly accelerated the pace of climate change – a natural phenomenon now dangerously amplified by human activities. In response to these growing environmental challenges, nature-based solutions have been widely advocated in global conservation efforts. These approaches aim to leverage the inherent resilience of ecosystems to mitigate climate impacts, restore biodiversity, and support sustainable development. However, a paradox emerges: we continue to exploit nature to satisfy our needs and greed, while simultaneously relying on the same natural systems to act as a buffer against the consequences of such exploitation. This dual dependence risks creating deeper ecological imbalances and may further complicate the ability to address the climate crisis effectively.

In this context, rather than merely attempting to understand the intricate complexity of ecological systems from a scientific standpoint, it is far more critical to recognise a fundamental truth – that ecology is the permanent economy.

Acknowledging this principle will lead to a focus on ecological health as the basis for human survival, economic stability and climate resilience

Acknowledging this principle shifts our perspective from short-term exploitation to long-term stewardship, positioning ecological health not as a constraint, but as the very foundation of human survival, economic stability, and climate resilience.

This realisation is not just timely – it is essential to confronting the ongoing environmental crisis and shaping a sustainable future. It is only through this reframing that humanity can move from reactive conservation to proactive planetary sustainability. The climate crisis is not just a scientific challenge. It is a moral and existential reckoning with the ecological foundations of our existence.

The need to reconnect with nature

Climate change and change in distribution patterns of biological diversity are not new for planet earth. However, the rate at which it is now occurring is detrimental to the planet’s biological diversity, including people, due to past unsustainable developmental activities by humans. Therefore, the change we need must come from within.

Since all developmental activities across the globe are aimed at fulfilling human needs, adopting a sustainable lifestyle is every individual’s responsibility in order to ensure the success of global sustainability initiatives. To achieve this, we must realise that humans are an integral part of nature.

Though technological advancements have distanced modern lifestyles from nature, one unique natural trait that humans possess is the power to reconnect with nature using emotion (which still lives within us). Thus, future conservation efforts should be designed to strengthen our emotional bond with nature. To ignite this, a realisation that “ecology is the permanent economy”, is more imperative than merely understanding the ecological complexity that exists in nature.

The views expressed are personal

Content.

- The phrase, “Ecology is the permanent economy”, made popular by environmentalist Sunderlal Bahuguna, is much more than a slogan.
- It is a profound reminder of the foundational truth that human prosperity is inextricably linked to ecological health. It is true that economic development without exploiting natural resources and economic stability without conserving them are impossible.
- Despite being part of the animal kingdom, human evolution, through the course of civilisation, has led to a growing disconnection from nature.
- This disconnection with nature has been identified as a reason for the ongoing biodiversity loss (the recent Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services or IPBES Transformative Change report).

- In the early stages of human history, a nomadic lifestyle compelled individuals to rely on and exploit natural resources solely for their basic, day-to-day survival needs.
- Over time, this individual-centric resource use evolved into collective consumption aimed at meeting the needs of growing communities. As human societies expanded and organised themselves into nations, this demand scaled further to cater to the needs of entire countries.
- Eventually, this progression gave rise to global competition, where nations began to exploit nature not only to satisfy present demands but also to secure resources for future development.
- Unlike humans, no other species in the animal kingdom exhibits this pattern of large-scale, anticipatory exploitation of natural resources.
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- The ever-intensifying cycle of human consumption and global competition has placed an unprecedented strain on the planet's ecosystems and significantly accelerated the pace of climate change — a natural phenomenon now dangerously amplified by human activities.
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A death that spotlights irrigation problems

In March 13, 2025, Kailash Arjun Nagare, a 2020 Young Farmer Award recipient, from Maharashtra, died by suicide, citing unaddressed irrigation demands. While India reports the highest water usage in agriculture globally, access to water for irrigation remains a contentious issue. Nagare's death points towards the inequity in distribution, with social inequalities, water governance mechanisms, and policies determining the contours of allocation. The problem of water scarcity in India is thus multifaceted, indicating the co-existence of actual physical shortage with economic scarcity due to inequitable access and management.

Untenable expansion

The agricultural sector accounts for almost 80% of the water withdrawal in India. Every year, 688 billion cubic metres of water is consumed by the farm sector, the highest in the world. Irrigation is an inevitable input for increasing agricultural production. However, its expansion has been highly untenable. The majority of the area under water-guzzling crops such as rice, wheat, and sugarcane is currently in the water-scarce north-west and sub-tropical belts of the country. According to a study published in *Nature Water* (2024), India alone accounted for 36% of global unsustainable irrigation expansion that happened between 2000 and 2015, with environmental and socio-economic implications.

Even as irrigation has been proven to drive economic prosperity, various studies have reported that uneven progress has reinforced existing inequalities, between and within States. Considering that ground water is the dominant water source for irrigation in India, property rights, energy pricing policy, and the existence of well-functioning water markets have remained



Lisa Mariam Varkey

Senior specialist,
Socio-Economics,
International Rice
Research Institute

critical in determining water access to farms. Accordingly, while inequity has declined in canal, tank, and well irrigated systems, it has increased in the tube well irrigated system. Marginalised groups, especially women, are also disproportionately affected by increasing deprivation and decline of water tables with climate change intensifying disparities.

The environmental and financial consequences of aggressive groundwater extraction have also been profound. Due to over extraction, almost 17% of India's groundwater assessment units are deemed 'over-exploited' while 3.9% are in a 'critical' state. Intensive pumping has also resulted in massive energy consumption resulting in excessive carbon emissions. As per the latest data, 45.3-62.3 MMT of annual carbon emissions is attributed to groundwater irrigation, which constitutes 8-11% of India's total carbon emissions.

The operating efficiency and water use efficiency has also remained sub-optimal in Indian agriculture. While irrigation systems in India report an operating efficiency of 38%, in developed countries it is 55%. Coupled with misaligned cropping patterns and inefficient water use practices, irrigation water productivity (IWP) has also remained low in the major irrigation belts of the country. For example, Punjab, which claims the highest land productivity in rice, has one of the lowest IWPs for the crop. Similarly, in sugar cane, Tamil Nadu records the highest land productivity with IWP being dismal low. Besides water wastage, the adoption of non-optimal water management practices have been causing other negative externalities such as high GHG emissions as well. For example, with continuous flooding of rice as the major water management practice, paddy rice is the biggest contributor to global cropland emissions.

Considering the over-exploitation of ground water

resources, impending water scarcity and environmental externalities, further attempts to improve the irrigation system of the country should be built on efficient water-saving technologies, improved irrigation efficiency, and alternative sources of irrigation.

The way forward

While change in cropping patterns and ground water usage regulations through policy decisions should also be aimed at in the medium and long term, advancing irrigation technologies and practices based on sustainable intensification should be prioritised. Better irrigation efficiency may be aimed through the improvement of conveyance and application efficiency of irrigation systems. In geographies where water withdrawals and GHG emissions have been highest, alternative water management technologies such as alternate wetting and drying, which can result in significant water saving and reduced emissions, may be popularised. Similarly, micro-irrigation systems such as drip irrigation, with minimal application losses, may be popularised in crops such as sugar cane. Promoting solar-powered irrigation and/or bundling solar pumps with micro-irrigation systems is another promising option. However, with the marginal cost of pumping being zero, this should not result in increased groundwater depletion and should be regulated through initiatives such as assured grid connection offering economic incentives for efficient utilisation. Rain water harvesting structures and tail water storage pits may be popularised as supplementary irrigation sources. Since traditional supply-based mechanisms do not necessarily promote equitable distribution of irrigation water, initiating demand-driven allocation systems run by participatory irrigation management structures should be widely promoted.

Page No. 9, GS 3

Content.

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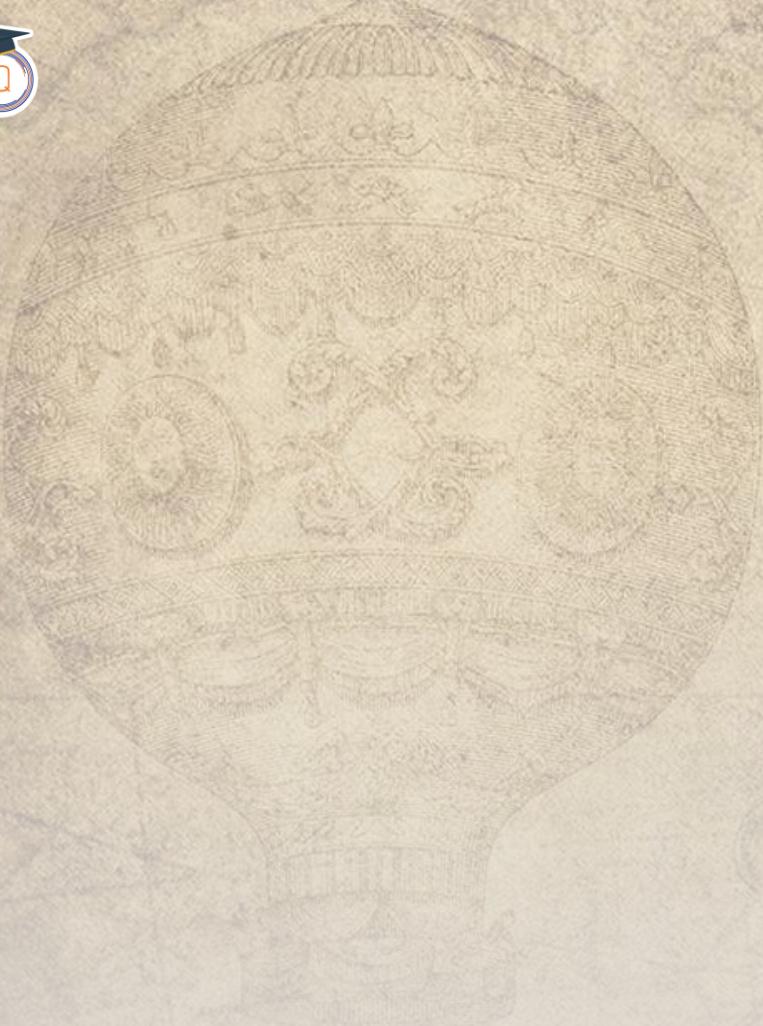
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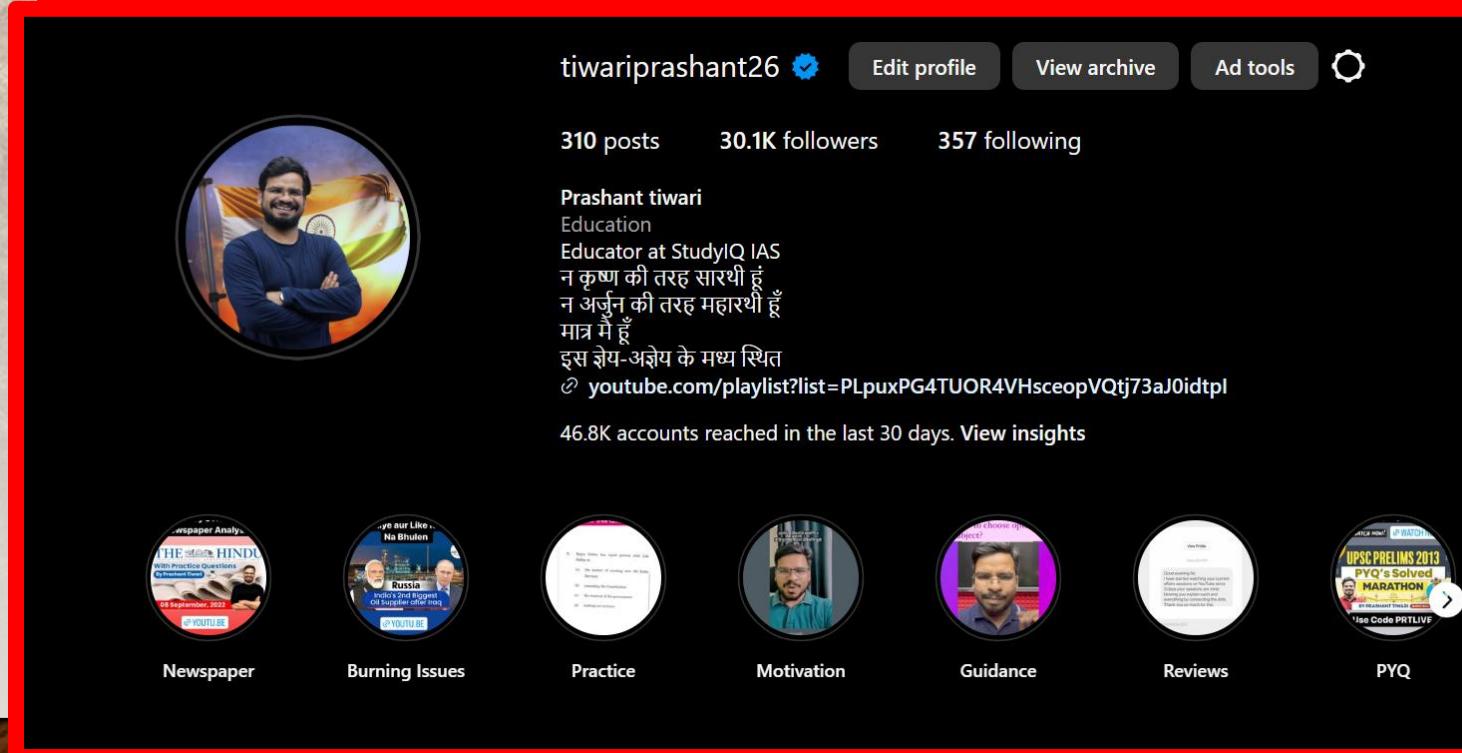
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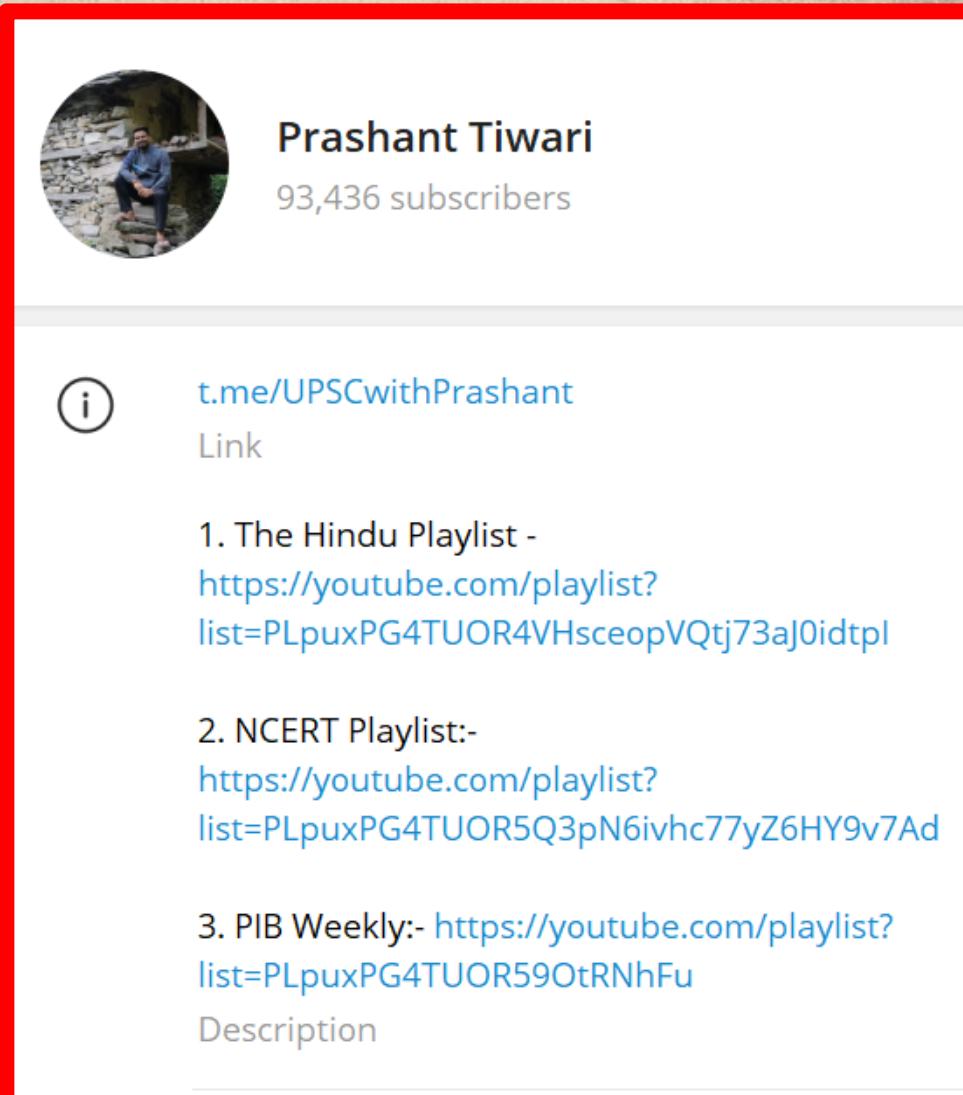
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