

## DAILY CURRENT AFFAIRS (22 August 2024)

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# Centre plans to take caste count during Census

A column on caste in the survey form is being considered, says a top government source; move comes amid persistent demands from Congress and other parties; the Census, last held in 2011 and scheduled to be completed in two phases, remains indefinitely delayed; demand to conduct caste census one of the reasons for the delay, says the source

### GS Paper I: Society

The Union government is yet to take a call on conducting the next Census, but active discussion is on to expand the data collection to include caste enumeration, a top government source told *The Hindu*.

"Discussions are on to include a column to record the caste of people during the next Census exercise. No decision has been taken yet," the source said.

The move comes amid persistent demands by the Congress and other political parties, including partners in the ruling National Democratic Alliance, to record caste.

"One of the reasons that has indefinitely delayed the Census is also the demand by political parties to conduct a caste census. Any wrong narrative can upset the whole exercise," the source said.

Other than enumerating the Scheduled Castes (SC) and Scheduled Tribes (ST), a caste-wise count of population as part of the Census has not been done in Independent India.

In 2011, the Congress-led United Progressive Alliance (UPA) conducted the first-ever caste count, separate from the Census exercise, but the findings were never made public.

In 2021, the Union government submitted an affidavit in the Supreme

### Past attempts

Other than enumeration of SCs and STs, the caste-wise count of population as part of the Census has not been done in Independent India

In 2011, the Congress-led United Progressive Alliance (UPA) conducted the first-ever caste count, separate from the Census exercise, but the findings were never made public

In 2015, the Congress government in Karnataka commissioned a caste census, the report of which has not been made public



Bihar was one of the first States to conduct and publish a caste census report in 2023

Court that the caste data enumerated in the Socio-Economic and Caste Census (SECC) of 2011 was fraught with "mistakes and inaccuracies".

The total number of

castes, according to the 1931 Census, was 4,147 and the SECC compiled more than 46 lakh castes, sub-castes and names.

"Assuming that some castes may bifurcate into

sub-castes, the total number cannot be exponentially high to this extent," the affidavit read, adding that the data cannot be relied on for reservation in education, employment or elections to local authorities.

The Census, last held in 2011, was scheduled to be undertaken in two phases: houselisting and housing schedule in 2020 and population enumeration in 2021, but it was indefinitely delayed, initially due to the COVID-19 pandemic. The National Population Register (NPR) is also to be updated simultaneously with the first phase of the Census.

The next Census will also be the first digital Cen-

sus where respondents will have the option to fill the questionnaire on their own.

### Lapsed deadline

The deadline to freeze administrative boundaries of districts, tehsils, towns and municipal bodies, among others, lapsed on June 30 this year. The order to freeze the boundaries, usually issued three months before the first phase of Census, has been extended 10 times since 2019.

Bihar was one of the first States to conduct and publish a caste census report in 2023. Collected in offline and digital modes, the enumerators were given a list of 215 categories,

from which people had to choose their caste.

Earlier in 2015, the Congress government in Karnataka commissioned a caste census, the report of which has not been made public so far.

The 31 questions for the first phase – houselisting and housing schedule – were notified on January 9, 2020.

As many as 28 questions have been finalised for the second phase – population enumeration – but are yet to be notified. The final set of questions for both the phases were asked during a pre-test exercise in 2019 in 76 districts in 36 States and Union Territories, covering a population of more than 26 lakh.

## Centre plans to take caste count during Census (22 August)

A column on caste in the survey form is being considered, says a top government source; move comes amid persistent demands from Congress and other parties; the Census, last held in 2011 and scheduled to be completed in two phases, remains indefinitely delayed; demand to conduct caste census one of the reasons for the delay, says the source

- The Union government is considering including caste enumeration in the next Census, but no decision has been made yet.
- Discussions on adding a column for recording caste during the Census are ongoing, amid demands from political parties like the Congress and others.
- The demand for a caste census has contributed to the delay in conducting the next Census.
- In Independent India, the Census has only enumerated Scheduled Castes (SC) and Scheduled Tribes (ST), not a full caste-wise population count.
- The first-ever caste count was done separately from the Census in 2011 by the Congress-led UPA, but the results were never published.
- In 2021, the Union government informed the Supreme Court that the caste data from the 2011 Socio-Economic and Caste Census (SECC) was filled with mistakes and inaccuracies.
- The 1931 Census recorded 4,147 castes, while the SECC of 2011 identified over 46 lakh castes, sub-castes, and names.

- The government is considering adding a caste option in the next Census, where people can fill out their caste information themselves.
- In 2015, Karnataka's Congress government conducted a caste census, but the report has not been released.
- The first phase of the Census, focusing on houselisting, had 31 questions notified in January 2020.
- The second phase, focusing on population enumeration, will have 28 questions finalized but not yet notified.
- A pre-test for these questions was conducted in 2019 across 76 districts in 36 states and Union Territories, covering over 26 lakh people.
- The deadline to finalize administrative boundaries for the Census lapsed on June 30, 2023, and has been extended 10 times since 2019.
- Bihar published a caste census report in 2023, using both offline and digital methods, with a list of 215 categories for people to choose from.
- The last Census was in 2011, and the next one was planned for 2020-2021 but was delayed due to COVID-19.
- The upcoming Census will be the first digital Census, and the National Population Register (NPR) will be updated at the same time.

## Growth of e-commerce a matter of concern: Goyal

GS Paper III

Aroon Deep  
NEW DELHI

Union Commerce and Industry Minister Piyush Goyal on Wednesday hit out at predatory pricing policies of e-commerce players such as Amazon, signalling that the sharp growth of online retail could cause a huge “social disruption” by eating into the prospects of 100 million small stores that create jobs across India.

Although e-commerce is here to stay, he said its growth must be ‘orderly’ and ‘citizen-centric’. “I don’t see it as a matter of pride that half our market could be driven by e-commerce 10 years from now. It’s a matter of concern,” he said.

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# ‘Rapid e-com growth could hit millions of retail stores and jobs’

Goyal red flags predatory pricing policies, faster growth in high-margin items’ online sales; questions some of Amazon’s business practices

Aroon Deep  
NEW DELHI

Commerce and Industry Minister Piyush Goyal on Wednesday raised questions about the business and pricing strategies of major e-commerce players like Amazon in India, and dismissed a report that concluded e-tailers’ growth did not pose a significant risk to employment opportunities in the country.

Although he acknowledged that e-commerce was here to stay, the Minister stressed that the sector’s growth must be ‘orderly’ and ‘citizen-centric’, and its role must be cautiously mulled over.

“Are predatory pricing policies good for the country?... I don’t see it as a matter of pride that half our market could be driven by e-commerce 10 years from now. It’s a matter of concern,” he said.

“Are we going to cause huge social disruption with this massive growth of e-commerce?” he asked, referring to the detrimental effects of online retailers eating into the business prospects of 100 million small retailers across the country.

Speaking at the release of a report on the “Net Impact of E-Commerce on Employment and Consumer Welfare in India”, issued



They create entities where Indians contribute to the creation of those entities, then they get caught and shut down those entities  
**PIYUSH GOYAL**  
Commerce and Industry Minister

jointly by EY India and Pahle India Foundation, Mr. Goyal completely disassociated himself from its findings.

The report’s conclusions seemed to be driven by the “urge to show” that e-commerce hasn’t had an impact on employment, the Minister said.

Beyond traditional e-commerce, the Minister also flagged concerns about the impact of cloud kitchens and online food delivery apps on restaurants.

### Amazon worries

“When Amazon says we are going to invest a billion dollars in India, and we all celebrate, we forget the underlying story that that billion dollars is not coming in for any great service or any great investment to support the Indian economy, they made a billion dollar loss in their balance sheet... If you make ₹6,000 crore in losses in one year, doesn’t that smell of predatory pricing to any of you?” the Minister asked.

Noting that the company apparently spent \$1 bil-

lion paying professionals in India, the Minister mused that the firm may have spent the money to retain the country’s top lawyers “so there’s nobody left to fight” against them.

“What is that loss? As an e-commerce platform, they are not allowed to do B2C [business to consumer] transactions,” Mr. Goyal said, apparently referring to Press Note 3 of 2016, a regulation that prohibits e-commerce firms holding their own inventory of goods, from receiving foreign direct investment.

“They create entities where Indians contribute to the creation of those entities, then they get caught and shut down those entities. But they only re-route all the business through an entity to show that it’s business to business,” Mr. Goyal stressed.

“But the reality is all of you buy on these platforms. But B2C is not allowed on these platforms. How are they doing this? Should this not be a matter of concern for all of us?” the Minister underlined.

# Dalit, tribal organisations protest against SC's sub-quota decision

## GS Paper I: Reservation

NEW DELHI/PATNA/BHOPAL

Coalition groups representing more than 21 Dalit and Adivasi associations on Wednesday held protest marches and rail and road blockades against the Supreme Court's August 1 judgment on the sub-classification of Scheduled Castes. They demanded that the Centre clear its stand on sub-categorisation, bring a law to "nullify" the judgment, and conduct a caste census to reveal the "real situation" of different castes in India.

Earlier in the day, Union Minister Chirag Paswan joined a host of prominent Opposition leaders from across parties to support the peaceful protests against the Supreme Court's judgment allowing sub-categorisation of the SC quota, saying on Wednesday that he and his party – the Lok Janshakti Par-



Bhim Army chief Chandra Shekhar Aazad with others during a protest at Jantar Mantar in New Delhi on Wednesday. PTI

ty (Ram Vilas), an NDA ally – "morally supported" the protests against the "Supreme Court's decision on SC-ST reservation".

While normal life was affected in Bihar and Jharkhand, where the police resorted to baton charging protesters and using water cannons, other States like Uttar Pradesh, Madhya Pradesh, Haryana, Punjab, Chhattisgarh, Rajasthan, Odisha, Gujarat saw these

outfits take out protest marches in several districts. Many protesters alleged violence by the police in Uttar Pradesh.

As the protests continued through the day, the central leaderships of principal Opposition parties – the Congress and the Samajwadi Party – expressed support for the protests while also maintaining their ambiguity on the core issue of sub-categorisation

of SC and ST quotas; whereas smaller parties like the Bahujan Samaj Party (BSP), Azad Samaj Party, and Bharat Adivasi Party wholeheartedly opposed sub-categorisation, with many prominent Bahujan leaders in the North too supporting the protests.

Congress leader Pawan Khera, in a statement, said, "People from SC/ST/OBC are always being kept anxious about one thing or the other and this anxiety about the Centre's intent is there amongst them. And it is their right to protest peacefully against what they consider incorrect."

Meanwhile, Law Minister Arjun Ram Meghwal told presspersons that the Centre had already clarified its stand on the "creamy layer" observations of some judges, reiterating the government's stand that the order was meant for the States.

(With inputs from PTI)

## E.V. Chinnaiah Case

The case of E.V. Chinnaiah vs. State of Andhra Pradesh (2004) is a significant judgment by the Supreme Court of India that addressed issues related to the rights of Scheduled Castes (SC) and Scheduled Tribes (ST) and the implications of state policies regarding reservations and employment.

### Facts of the Case:

- **Petitioner:** E.V. Chinnaiah, a member of the Scheduled Caste community in Andhra Pradesh, challenged the Government Order (GO) issued by the State Government that classified certain castes within the SC category into sub-categories.
- **Government Order:** The GO aimed to provide reservations and benefits based on these sub-categories, leading to claims of discrimination within the SC community.

### Key Issues:

1. **Reservation Policies:** The main issue revolved around whether the classification of SCs into sub-categories for the purpose of reservations was constitutionally valid and whether it was discriminatory against individuals belonging to the broader SC category.
2. **Right to Equality:** The petition raised questions about the violation of the right to equality under **Article 14 of the Indian Constitution**, which guarantees equal treatment before the law.

### Supreme Court Judgment:

- The Supreme Court ruled in favor of E.V. Chinnaiah, stating that the classification of SC communities into sub-categories was unconstitutional and violated the fundamental right to equality.
- The Court emphasized that while the government has the right to create policies to uplift marginalized communities, these policies should not lead to further discrimination against a particular group within that community.
- The judgment reaffirmed the need for uniformity in the application of rights and protections under the Constitution for all members of Scheduled Castes.

# 'WHO investigating suspected new polio strain in Meghalaya'

Health Department officials in Meghalaya have been on high alert since a poliomyelitis case was diagnosed in a two-year-old child from Tikrikilla

**The Hindu Bureau**  
GUWAHATI

Meghalaya Health Minister Mazel Ampareen Lyngdoh on Wednesday said the World Health Organization (WHO) was conducting a thorough investigation to determine if a new strain of polio has infected a two-year-old child at Tikrikilla in West Garo Hills district of the State.

Though the State government is awaiting the sample test reports from laboratories in Kolkata and Mumbai, the Union Health Ministry said the child's case was not that of wild polio but a vaccine-derived infection that presents in some people with low immunity. The test reports are expected by the end of the week.

"Another case has apparently been identified in some other State. It is a different strain of polio to my understanding but WHO is investigating the case further for certainty," Dr. Lyngdoh said.

She said the State go-



The WHO declared India polio-free in 2014 after the last case of wild poliovirus was reported in 2011. C. VENKATACHALAPATHY

vernment and the Health Department had been closely monitoring the situation at Tikrikilla, where people have a history of opposing vaccination. "The child is under observation and we are in touch with the family. The doctors attending to the child said the child is okay," she said, observing that the case may impact vaccination efforts in the future. The Minister did not rule out the possibility of the WHO issuing an advisory if the new strain is confirmed. The WHO declared

India polio-free in 2014 after the last case of wild poliovirus was reported in 2011.

Health officials in Meghalaya have been on high alert after the emergence of the poliomyelitis case from Tikrikilla.

While the oral polio vaccine has helped eliminate wild polio, the live virus in the vaccine can mutate and lead to vaccine-derived poliovirus, which can cause polio in unvaccinated individuals or in areas with low immunisation coverage.

## Poland in World War II

- The country was the first to be invaded by Nazi Germany, and its people endured immense suffering under both German and Soviet occupation.

### The Invasion and Occupation:

- **The Blitzkrieg:** On September 1, 1939, Nazi Germany launched a surprise invasion of Poland, using a new strategy known as the "**Blitzkrieg**" (**lightning war**). The Polish military, though bravely defending the country, was overwhelmed by the superior German forces.
- **German Occupation:** Poland was divided between Germany and the Soviet Union. The German-occupied territories were subjected to brutal occupation, with millions of Poles killed, imprisoned, or deported to concentration camps.
- The Nazis sought to eradicate Polish culture and identity, and many Polish intellectuals and cultural figures were murdered.
- **Resistance Movement:** Despite the harsh conditions, a strong resistance movement emerged in Poland. The Polish Underground State, led by the Home Army (Armia Krajowa), carried out numerous acts of sabotage and guerrilla warfare against the German occupiers.

### The Warsaw Uprising:

- **A Symbol of Resistance:** One of the most dramatic events of the war was the Warsaw Uprising in August 1944. Polish Home Army units launched an uprising against the German occupiers in Warsaw, hoping to liberate the city before the advancing Soviet forces arrived.
- **Brutal Suppression:** The German forces responded with extreme brutality, destroying much of the city and killing tens of thousands of civilians. The uprising was ultimately unsuccessful, and Warsaw was left in ruins.

### Liberation and the Aftermath:

- **Soviet Liberation:** Poland was eventually liberated by the Soviet Red Army in 1945. However, the country emerged from the war as a Soviet satellite state, and its independence and sovereignty were severely curtailed.

**India-Poland Relations:**

- The relationship between India and Poland dates back to the 19th century when Sanskrit and Hindi were taught at the Jagiellonian University in Krakow. Both countries have shared common ideological perceptions, based on their opposition to colonialism, imperialism, and racism.
  - Poland is India's largest trading partner in Central and Eastern Europe. Bilateral trade has witnessed significant growth in recent years, driven by increased exports of pharmaceuticals, agricultural products, and IT services from India to Poland. Poland, in turn, exports machinery, chemicals, and automotive parts to India.
  - India and Poland have been strengthening their defense cooperation, with a focus on joint military exercises, training, and procurement of defense equipment. Both countries have signed several defense agreements to enhance their military ties.
  - India and Poland have a rich cultural heritage, and both countries have been actively promoting cultural exchange programs. This includes the exchange of artists, musicians, and scholars, as well as the organization of cultural festivals and exhibitions.
  - Both countries have been working to strengthen their maritime cooperation, including collaboration in areas such as maritime security and blue economy.
- 
- **The Cold War:** Poland's role in the Cold War was significant. It became a key member of the **Warsaw Pact** and was aligned with the Soviet Union. The country experienced a period of political repression and economic stagnation.
  - **Solidarity and the Fall of Communism:** In the **1980s**, the **Solidarity trade union movement** emerged in Poland, challenging the communist regime. Led by **Lech Wałęsa**, **Solidarity** played a crucial role in the fall of communism in Poland and the rest of Eastern Europe.

# ICAR, Penn State team makes a tool small enough to edit plant genomes

Researchers have developed a plant genome editor consisting of a protein derived from *Deinococcus radiodurans* bacteria – famous for being able to survive extreme conditions. The protein is less than half the size of the proteins CRISPR commonly uses to target specific parts of the DNA

Sanjukta Mondal

**F**lour, chocolate, cocoa powder, eggs, and butter are all the ingredients to make a sweet treat you crave.

The only thing you need right now is a step-by-step recipe to help you turn the ingredients into a yummy brownie.

## Too big for its britches

Nature also has the ingredients it needs to 'make' living organisms, using a genetic instruction manual called the genome. A small change in the genome's composition can determine whether the living thing being made is a flower that exhibits two petal colours, a cat that has big or small ears or if the coriander leaves will taste like soap to some people.

With the help of the CRISPR gene-editing tool, scientists today can precisely edit genomes to introduce desirable genetic traits or remove undesirable ones.

CRISPR holds the potential to revolutionise agriculture in particular by allowing agricultural scientists to increase crop yields and improve resistance to disease and anomalous weather through gene-editing. However, there has been a critical obstacle: a commonly used form of the CRISPR system is too big for plant genomes.

This system uses one of two proteins, Cas9 or Cas12, to target specific parts of the DNA. But they are too bulky for plant cells to accommodate.

## Smaller is better

A team of researchers led by Kutubuddin Molla from the ICAR-National Rice Research Institute in Cuttack and Mirza Baig from the Pennsylvania State University in the U.S. presented an alternative that could solve this major problem in plant genome editing in a recent paper in the journal *Plant Biotechnology Journal*.

They reported developing a plant genome editor consisting of a protein called ISDra2TnpB, derived from bacteria called *Deinococcus radiodurans* (famous for being able to survive extreme environmental conditions). ISDra2TnpB is less than half the size of Cas9 and Cas12.

V.S. Sresty Tavva, principal scientist at the Crop Improvement Program at the Tata Institute for Genetics and Society (TIGS), Bengaluru, who wasn't involved in the study, expressed enthusiasm over its findings.

"Currently, [since] there are not many options available for plant genome editors, the improved TnpB certainly adds value. One should utilise the advantage of the size of TnpB in generating edited plants for various traits of interest," he said.

## TnpB's editing chops

TnpB is a protein made up of around 400 amino acid units (different combinations of the 20 amino acids make up all proteins). It belongs to a family of transposable elements, or transposons. Sometimes called "jumping genes", transposons are parts of a genome that can move from one location to another.

The genome consists of two strands of DNA bonded to each other. Each strand is made up of building blocks called nucleotides. In turn, each nucleotide has three pieces; two are common to all of them whereas the identity of the third



Paddy in Bali, Indonesia. Researchers have expressed hope a new miniature genome-editing tool will help rice crops become shorter and less prone to damage during cyclones. SERGIO CAMALICH/UNSPLASH

one can be one of four options: adenine (A), thymine (T), cytosine (C) or guanine (G). The DNA's 'sequence' refers to the order in which nucleotides containing these four compounds are arranged.

In the new system, TnpB hitches a ride on a piece of RNA that guides it to the target DNA sequence. Once there the TnpB binds with the sequence and eliminates it. The cell that houses this DNA repairs the cut by restoring the "correct" sequence. Thus, the genome is modified to replace an undesirable sequence with a desirable one.

The researchers behind the new study exploited the genome editing abilities of a TnpB-based system to achieve a 33.58% editing efficiency in an average plant genome on targets that Cas9 or Cas12 couldn't reach. They demonstrated that the genome editor was effective on both types of flowering plants—monocots (like rice, which have one seed leaf) and dicots (like *Arabidopsis*, a plant related to cabbage and mustard that has two seed leaves).

## Codons and regulators

The team also built four versions of the TnpB-based editing tool and tested them on rice protoplasts – plant cells without the cell wall – to identify the best among them. In their initial experiments, the versions had a low editing efficiency.

To improve it, Dr. Molla et al. did two things. First, they used a process called codon optimisation. For example, cells in the body make the amino acid lysine by following an instruction in the genome represented by a sequence of three nucleotides. Such sequences of three are called codons.

The codon sequence that contains the recipe for lysine varies in different types of organisms. TnpB is a protein extracted



The CRISPR system uses one of two proteins, Cas9 or Cas12, to target specific parts of the DNA. But they are too bulky for plant cells to accommodate

from *D. radiodurans*, a prokaryotic bacteria, which has a different codon for lysine than do eukaryotes like plants. So the researchers edited the codon bias of TnpB to match that of rice protoplasts to improve the editing efficiency, Dr. Molla explained.

The second thing the researchers tweaked were the regulatory elements. When the TnpB and the specific RNA that guides it to the target DNA are transferred from a prokaryote to a eukaryote, researchers also need to include sequences called promoters and terminators that govern and regulate the expression of TnpB.

"We added promoters that are likely to enhance the expression of TnpB and lead to better editing," Dr. Molla said.

## A hi-res upgrade

The researchers finished with some finishing touches to the TnpB-based gene-editing system. They deactivated TnpB and fused it with another protein to create a 'hybrid' base editor.

When accompanied by the guide RNA, this editor could swap out a single nucleotide in the DNA sequence.

This wasn't possible with the previous version, with active TnpB, because it tended only to delete DNA sequences and couldn't swap one sequence for another.

The new base editor thus opened up

exciting possibilities for crop innovation by facilitating the alteration of genes at the level of individual nucleotides.

## A future of edited plants

The TnpB-based editors the researchers built can edit the plant genome using both base editing and transcription activation, two widely used techniques in plant synthetic biology.

Dr. Tavva however said most of the claims were based on data obtained from protoplasts and that the scenario might change when dealing with processes by which an organism absorbs external DNA and integrates it into its genome.

It also appeared that the efficiency of the base editing system fell short in dicot plants as indicated by the results (0.2-0.46% average editing efficiency) reported using *Arabidopsis*. "Regardless," Dr. Tavva said, "the plant genome editing community should try this miniature editing system in crop species of their choice to improve various traits of interest."

TIGS director Rakesh Mishra echoed him: "It is exciting to see a novel and effective genome editing tool being invented. While more development will be needed, alternatives like this are welcome news."

The researchers have expressed hope this miniature genome editing tool will help remove anti-nutrient factors from food crops, reduce their susceptibility to pests, and help rice crops become shorter and less prone to damage during cyclones.

(Sanjukta Mondal is a chemist-turned-science-writer with experience in writing popular science articles and scripts for STEM YouTube channels. sanjuktamondal.sm@gmail.com)

## Van Allen radiation belts

- The Van Allen radiation belts are zones of charged particles trapped by the Earth's magnetic field.
- They are named after Dr. James Van Allen, the physicist who discovered these belts in 1958 through instruments carried by the first successful American satellite, Explorer 1.
- There are two main belts, namely the inner and outer radiation belts.

#### Structure of the Van Allen Radiation Belts:

##### 1. Inner Belt:

- The inner radiation belt extends from about **1,000 kilometers (620 miles)** to **6,000 kilometers (3,700 miles)** above the Earth's surface. It is primarily composed of high-energy protons and electrons.
- This belt is formed by cosmic rays entering the Earth's atmosphere and generates high-energy particles due to the decay of radioactive isotopes in the atmosphere.

##### 2. Outer Belt:

- The outer radiation belt lies between approximately **13,000 kilometers (8,100 miles)** and **58,000 kilometers (36,000 miles)** from the Earth. It mainly consists of high-energy electrons.
- This belt is more dynamic than the inner belt, affected by solar activity and fluctuations in the Earth's magnetic field.

#### Formation and Dynamics:

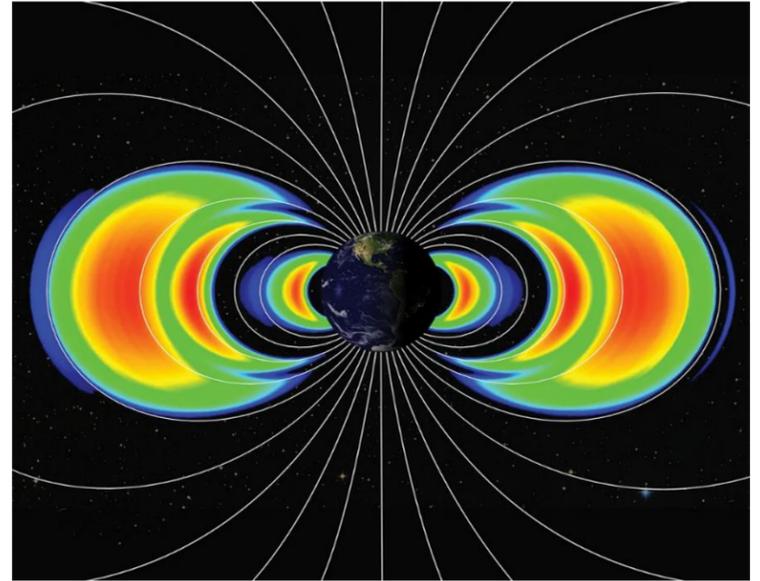
- The Van Allen belts form due to the **interaction of the solar wind—a stream of charged particles emitted by the Sun—with the Earth's magnetic field.**
- These charged particles are captured by the magnetic field and are confined to certain regions around the planet, creating the radiation belts.
- Solar flares and coronal mass ejections can enhance the number of particles in the belts temporarily, leading to increased radiation levels that can affect satellites and astronauts.

#### Effects of the Van Allen Radiation Belts:

##### 1. Impact on Satellites:

- Satellites in low Earth orbit must be designed to withstand the radiation present in the Van Allen belts. High-energy particles can damage satellite electronics and sensors.

##### 2. Astronaut Safety:



# Earth whistles when lightning strikes, and there's a new melody

Priyali Prakash

The earth is surrounded by a bubble-shaped magnetic field that shields the planet from radiation from the Sun and other celestial objects. This field is called the **earth's magnetosphere**.

During a solar storm, the Sun shoots out charged particles with more than usual energy through the space around it. Without the magnetosphere, these particles could have rendered life as we know it on earth impossible. But because the magnetosphere is there, these particles become trapped in it and zip around the earth rather than towards the ground in two large doughnut-shaped radiation belts in the upper atmosphere. These are called the **Van Allen radiation belts**.

The American astrophysicist James Van Allen discovered these belts in 1958 and studied them in detail. Van Allen's work was important for humans to go to the moon, and today we contemplate visiting even more distant parts of space. Van Allen found that **some parts of the radiation belts were weaker than others and that flying through these parts would be less damaging to spacefaring humans and instruments**.

When lightning strikes, electrical energy flows in a path through the atmosphere that we see as a bolt. As it

**Without the magnetosphere charged particles released by the Sun would render life impossible. Instead these particles are trapped in what is called the Van Allen radiation belts**

cuts through the air, the bolt releases its energy as electromagnetic waves with a range of frequencies. The **earth's magnetic field can guide some of these waves up and into a layer of ionised gas above the atmosphere, where they travel along magnetic field lines – like a train moving on tracks – between the earth's northern and southern hemispheres**. The **higher the frequency of these waves, the faster they travel** (even up to a tenth of the speed of light).

The frequencies of these waves are often within the human hearing range (20-20,000 Hz) and can be heard as whistling noises through a receiver. **When the lower frequency waves among them travel, they can shed some energy via parts of the upper atmosphere, so their sounds have a declining tone**.

In a paper published in the journal *Science Advances* on August 16, scientists from the University of Alaska Fairbanks reported discovering **a new type of whistler wave produced by a previously unknown wave generation mechanism**. They found **lightning energy injected into the ionosphere at low latitudes could get reflected like a light from a mirror into the magnetosphere**. This contradicted previous claims that energy insertion at low latitudes can't escape the ionosphere.

The discovery has significant implications because including this new form of whistlers could double the amount of lightning energy going into the magnetosphere, which in turn means scientists may have to revise their calculations of lightning's effects on the Van Allen radiation belts.

After all, it's a question of humans' doorway to outer space.

○ The belts pose a risk to astronauts in space, particularly during extra-vehicular activities (spacewalks), where exposure to intense radiation can have harmful effects. Space missions are carefully planned to minimize exposure.

### 3. **Geomagnetic Storms:**

○ On occasions of high solar activity, particles from the Van Allen belts can cascade down into the atmosphere, leading to phenomena such as auroras, which are visible in polar regions.

## Earth whistles when lightning strikes, and there's a new melody (22 August)

- Earth is surrounded by a magnetic field called the magnetosphere, which protects the planet from harmful radiation from the Sun and space.
- During a solar storm, the Sun sends out charged particles with high energy. The magnetosphere traps these particles and prevents them from reaching the ground.
- These particles end up in two doughnut-shaped radiation belts in the upper atmosphere, known as the Van Allen radiation belts.
- James Van Allen discovered these belts in 1958. His research helped **make space travel possible and is important for future space exploration**.
- **Lightning strikes create electromagnetic waves**, which travel through the atmosphere. Some of these waves can be guided by Earth's magnetic field into a layer of ionized gas above the atmosphere.
- **These waves travel along magnetic field lines between the northern and southern hemispheres. Higher frequency waves travel faster**, up to a tenth of the speed of light.
- The frequencies of these waves can be heard as whistling noises through a receiver. Lower frequency waves lose energy as they travel, so their sounds decrease in tone.
- Scientists from the University of Alaska Fairbanks discovered **a new type of whistler wave, which was produced by a previously unknown mechanism**.
- **They found that lightning energy injected into the ionosphere at low latitudes could be reflected into the magnetosphere, contrary to earlier beliefs**.
- **This discovery could double the amount of lightning energy entering the magnetosphere, which might lead scientists to revise their understanding of lightning's impact on the Van Allen radiation belts**.
- This research is important for space exploration and understanding Earth's interactions with space.

## Moral pressure and human rights compliance (22 August)

- Two ways to enforce human rights norms: Powerful nations can use economic sanctions or military invasion, while smaller nations or NGOs can apply moral pressure through condemnation.
- Challenges from state sovereignty: State sovereignty often hinders the implementation of international human rights standards, but moral pressure can sometimes force governments to change.
- Authoritarian regimes: Countries like Russia, China, and North Korea often ignore international condemnations, especially when these criticisms are driven by political or economic agendas.
- Impact of naming and shaming: Publicly identifying and condemning human rights violators (naming and shaming) can sometimes pressure governments to improve their human rights records.
- Successful examples: In countries like Myanmar, Ethiopia, Colombia, and Argentina, naming and shaming has led to the release of political prisoners and changes in policies to address human rights concerns.
- Prosecution of dictators: Dictators such as Augusto Pinochet, Slobodan Milošević, Charles Taylor, and Alberto Fujimori were prosecuted after global condemnation of their actions.
- Cultural impact: Campaigns against violence toward marginalized groups have increased access to justice and reparations for victims, and led to greater human rights protections.

- Limitations: Some governments resist or deny allegations, making only superficial changes. However, continued pressure and activism can lead to greater accountability over time.
- Specific cases: Despite global condemnation, Israel has shown little compliance with human rights demands, but international student protests against actions in Palestine and Bangladesh have exerted moral pressure on those responsible.
- Global response: Unfortunately, many nations either remain passive or suppress protests to align with their right-wing agendas, hindering broader human rights progress.

### **Conundrum in international law**

- The main question is whether "naming and shaming" is an effective strategy for enforcing human rights.
- Naming and shaming involves publicly condemning countries like China, Russia, Israel, or Syria for their human rights violations, aiming to pressure them into reform.
- This strategy includes actions like petitions from organizations like Amnesty International, UN resolutions, or banning countries from international events like the Olympics.
- However, the effectiveness of these moral sanctions is questioned, especially when even stronger measures like military invasion or economic sanctions often fail to bring about change.
- A possible solution is to focus on building strong social and democratic institutions within countries so that human rights are upheld naturally from within the society.
- Human rights advocates should push for a connection between power and law, relying on popular support and democratic processes to challenge illiberal forces.
- There's a need to resist attempts to misuse liberal ideas for propaganda and manipulation by authoritarian regimes, which use these tactics to maintain power.
- The goal is to promote human rights and social reforms that weaken state tyranny and empower citizens.
- The current global situation is marked by prejudice, fanaticism, and authoritarianism, where free speech is suppressed, and people's dignity and freedoms are denied.

### **The state and human rights**

- Restoring personal liberty and bringing those guilty of human rights violations to justice is a responsibility of the state, according to the Universal Declaration of Human Rights.
- The state should closely examine its functions and policies to prioritize human rights, creating an environment of peace, tolerance, and understanding.
- The state must consider the protection of human rights as a binding and sacred duty. If the state is unwilling to support human rights, resistance activism becomes more legitimate as a means to defend the public against state persecution or indifference.
- Successes and failures in implementing human rights are linked to whether the state respects these rights without bias or favoritism.
- For human rights to be respected, the interests of those in power must align with the principle of human rights, supported by a deep moral concern.
- The state needs to build strong institutions that uphold democratic norms and protect human rights based on clear ideological commitments.
- The central importance of human rights must be established, especially in liberal systems, to maintain stability and promote public welfare in an equal society.
- Achieving this requires mobilizing political coalitions, institutional support, and ideologies that ensure compliance with human rights and hold violators accountable.
- This centrality of human rights is lacking in countries like North Korea, China, and others with right-wing governments, where power is prioritized over democratic accountability and human rights.

# After 'manifesto moment', budgetary disappointment

## GS Paper I: Society

Following a "manifesto moment" in the lead-up to the 2024 general election where several major political parties pledged support for the LGBTQ+ community, the 2024 Union Budget has dashed the hopes of queer Indians yearning for recognition in national politics.

A transformative overhaul of the government's approach towards LGBTQ+ rights was never expected – especially given the Solicitor General's vehement opposition to marriage equality before the Supreme Court of India last year. Yet, the mention of transgender rights in the Bharatiya Janata Party (BJP)'s own manifesto had sparked a glimmer of hope for progress under a Modi 3.0 government.

Instead, the LGBTQ+ community found itself reduced to a mere footnote in the Budget: the Ministry of Social Justice and Empowerment's allocation for "Comprehensive Rehabilitation for Welfare of Transgender Persons" under the Support for Marginalized Individuals for Livelihood and Enterprise (SMILE) programme. This programme promises to fund *Garima Grahals* (shelter homes), scholarships, and the National Council for Transgender Persons.

### Meagre funding for crucial programmes

On paper, the budgetary outlay for transgender welfare increased from ₹52.91 crore in FY24 to ₹68.46 crore in FY25. But a closer look reveals a harsh reality: actual expenditure was a meagre ₹22.82 crore in FY24. Nowhere is the impact of this discrepancy more starkly reflected than in the fact that most *Garima Grahals* have shut down over the past two years due to lack of funding, and the NCTP is barely functional.

With just a meagre increase for this financial year, who will fulfil the guarantee to build *Garima Grahals*, promised in the 'Sabka Saath, Sabka Vikaas' section of the BJP's 2024 *Sankalp Patra*?

SMILE is not the only victim of the government's apathy. Even more troubling is the



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While political manifestos in the run-up to the 2024 general election offered the LGBTQ+ community some hope, allocations in the Union Budget spell despondency

reduction in funding for the National AIDS Control Organisation (NACO) from ₹3,079.97 crore in FY24 to ₹2,892.00 crore in FY25.

NACO, tasked with both combating HIV/AIDS and preventing Sexually transmitted infections, plays a crucial role in public health. Despite decades of progress, India still faces one of the largest HIV epidemics in the world, with LGBTQ+ Indians at a higher risk of contracting the virus and facing distinct psychosocial challenges.

Today, over 2.4 million people in India live with HIV. Of those, almost 900,000 are not linked to treatment—and more than half a million are unaware they are even infected.

The last credible study by the National Aids Control Organisation (NACO) in 2003 estimated that 6% of India's adult population was infected with STIs. The more recent National Family Health Survey (2019-21) highlighted that 23.3% of sexually active unmarried men between 15 and 29 had more than one sexual partner, with risky sex practices and lack of condom use prevalent in both urban and rural areas. What prompted the government to slash funding not only for HIV prevention but also the fight against STIs when we are staring at a potential public health crisis?

### A denial of rights

The lack of budgetary allocation is not just about misplaced priorities or ideological differences. It is a systematic denial of the rights of millions of LGBTQ+ Indians, blocking their access to an equal share over the country's resources.

The numbers lay bare the reality. The 2011 Census counted 4.9 lakh transgender Indians. Even if we accept this disproportionately low figure, the 2024 Budget allocated a meagre ₹1,400 for the welfare of each transgender citizen. More realistic estimates suggest that the transgender population in India is around 1.22 crore, making this average allocation a pitiful ₹56 a person.

Young Indians, emboldened by recent court victories affirming that the Constitution of India

protects every single Indian citizen regardless of gender or sexuality, need a government that creates safe spaces to ensure that they are not harassed or bullied in schools – one that provides inclusive mental health care to prevent rising suicide rates among young LGBTQ+ youth, and one that guarantees equal access to education and employment.

### Political support helps

I hope that Members of Parliament from the Opposition parties, including my own party (the Nationalist Congress Party), which raised the demands of the LGBTQ+ community in their election manifestos, stand up for the rights of LGBTQ+ Indians in Parliament. I also hope – perhaps naively – that those in the government who got transgender rights included in the BJP's manifesto in the first place realise their missteps and work towards a shared vision of an inclusive future.

For too long, queer Indians have relied upon courts as guarantors of rights. As we navigate new political paradigms, it is important for the queer movement to build upon an impressive history of active political engagement – one that saw the Namdeo Dhasal march, in 1988, with trans women and sex workers from Kamathipura to the then Chief Minister Sharad Pawar's residence to demand protection from moneylenders and Shabnam Mausi being elected as India's first transgender MLA from Sohagpur in Madhya Pradesh in 1998.

Recent successes, such as the establishment of the transgender welfare board in Maharashtra in 2020 and the drafting of Tamil Nadu's LGBTQ+ policy in 2024, indicate that judicial progress results in executive action only when sustained by civil society pressure. We must take this lesson to heart, working not only with the Centre but also States and local bodies to ensure that rights recognised on paper are effectively implemented in practice.

## After 'manifesto moment', budgetary disappointment (22 August)

- In the 2024 general election, several major political parties promised support for the LGBTQ+ community, but the Union Budget did not meet those expectations.
- Although significant progress on LGBTQ+ rights was not expected due to the government's opposition to marriage equality, the mention of transgender rights in the BJP's manifesto raised some hopes.
- The LGBTQ+ community only received a small mention in the Budget through funding for transgender welfare programs under the "SMILE" programme, which supports initiatives like shelter homes (*Garima Grahals*) and scholarships.
- Although the budget for transgender welfare increased slightly from ₹52.91 crore in FY24 to ₹68.46 crore in FY25, actual spending last year was much lower (₹22.82 crore), and many shelter homes have closed due to lack of funding.
- The government made promises in its manifesto to support transgender people, but the small budget increase raises doubts about fulfilling those promises.
- The National AIDS Control Organisation (NACO), responsible for HIV/AIDS and STI prevention, saw its budget reduced from ₹3,079.97 crore in FY24 to ₹2,892.00 crore in FY25.
- NACO is crucial in public health, especially for the LGBTQ+ community, which faces higher risks of HIV/AIDS and psychosocial challenges. India has over 2.4 million people living with HIV, with many not receiving treatment.
- Past studies and surveys indicate that risky sexual practices are common in India, leading to a public health concern. Despite this, the government reduced funding for programs fighting HIV and STIs, potentially putting public health at risk.

### A denial of rights

- The lack of adequate budget allocation for LGBTQ+ rights isn't just a matter of misplaced priorities; it's a systematic denial of rights to millions of LGBTQ+ Indians, preventing them from accessing their fair share of resources.
- According to the 2011 Census, there are 4.9 lakh transgender people in India. Even with this low figure, the 2024 Budget allocated only ₹1,400 per transgender person for their welfare.
- More realistic estimates suggest the transgender population in India is around 1.22 crore, which means the allocation per person is a mere ₹56.
- Young Indians, supported by recent court rulings affirming their constitutional rights, need a government that provides safe spaces in schools, inclusive mental health care, and equal access to education and employment.
- Members of Parliament, especially from opposition parties, are encouraged to stand up for LGBTQ+ rights, as some included these demands in their election manifestos.

- There is hope that those in the government who initially supported transgender rights in the BJP's manifesto will realize their mistakes and work toward a more inclusive future.
- Queer Indians have historically relied on the courts to guarantee their rights, but there's a need to build on past political engagement, such as the 1988 Namdeo Dhasal march and the election of Shabnam Mausi as India's first transgender MLA in 1998.
- Recent successes, like the transgender welfare board in Maharashtra and Tamil Nadu's LGBTQ+ policy, show that judicial progress leads to action when backed by civil society pressure.
- It's essential to work not only with the central government but also with state and local bodies to ensure that the rights recognized on paper are effectively implemented in practice.

#### LGBTQ+

- **LGBTQ+** is an acronym that stands for **Lesbian, Gay, Bisexual, Transgender, Queer+**. It is an umbrella term used to represent people who identify as sexual or gender minorities.

#### Key Terms:

- **Lesbian:** A woman who is sexually or romantically attracted to other women.
- **Gay:** A man who is sexually or romantically attracted to other men.
- **Bisexual:** A person who is attracted to both men and women.
- **Transgender:** A person whose gender identity differs from their assigned sex at birth.
- **Queer+:** An umbrella term that encompasses a wide range of gender identities and sexual orientations, often used by people who do not fit neatly into the categories of lesbian, gay, bisexual, or transgender.

#### LGBTQ+ in India

India has a long history of diversity and acceptance of different sexual and gender identities. However, the legal and social landscape for LGBTQ+ individuals has been complex and evolving.

- **Historical Context:** India has a rich history of diverse gender expressions, as evidenced in ancient texts and cultural practices.
- **Legal Challenges:** Despite **decriminalizing same-sex sexual relations in 2018**, LGBTQ+ individuals in India continue to face legal and social discrimination.
- **Social Acceptance:** There has been a growing acceptance of LGBTQ+ individuals in Indian society, with increasing visibility and activism.

## Double brake (22 August)

### Struggling with anti-incumbency, BJP faces a resurgent Congress in Haryana

- The Bharatiya Janata Party (BJP) in Haryana is preparing for the upcoming Assembly election on October 1, where all 90 seats will be contested in a single phase.
- The Jannayak Janta Party (JJP) aims to maintain its position as a third player, and the Aam Aadmi Party (AAP) is trying to emerge as a significant force, but the main contest is likely between the BJP and the Congress.
- The BJP faces challenges due to being in power at both the State and Centre for the last 10 years, leading to anti-incumbency sentiment.
- In response, the BJP replaced the former Chief Minister Manohar Lal Khattar with Nayab Singh Saini in March. Saini has been trying to win over various interest groups by reversing previous decisions and introducing new schemes.
- Some of these measures include increasing expenditure limits for gram panchayats, ensuring job security for 1.20 lakh contractual employees, and restoring the creamy layer annual income for Other Backward Classes to ₹8 lakh.
- The BJP also promised a 10% reservation for Agniveers in State government jobs and expanded minimum support prices for crops.
- The BJP had previously benefited from the social divide between Jats and non-Jats, but this alliance has weakened due to the farmers' agitation and the Agnipath scheme in the past five years.
- The BJP is also dealing with internal rivalries and a questionable majority in the Assembly.
- The Congress, led by former Chief Minister Bhupinder Singh Hooda, is focusing on issues like unemployment and the agricultural crisis. Hooda has managed to unite the party behind him.
- The Congress still needs to ensure its factional leaders remain united, and communal polarization, though reduced, could disrupt their plans.
- In the last Lok Sabha election, the BJP and Congress each won five of the 10 seats in Haryana, with the Congress increasing its vote share.
- The election outcome in Haryana will have significant implications for both the Congress and the BJP at the national level.

## Power play

### Hydropower projects must factor in the environmental costs too

While Wayanad in Kerala limps back to normal life after the devastating landslide last month, a landslide on Tuesday in Sikkim caused damage to six houses and a building of the National Hydroelectric Power Corporation (NHPC) at its Teesta-5 hydropower station in Gangtok. There is no comparison of the impact of the event in both places, as there was no loss of lives or injuries reported in Sikkim. However, the cause for concern is that this is the second natural-disaster-led assault on a hydropower project along the Teesta. A deluge from the South Lhonak glacier in North Sikkim last October washed away the **Chungthang dam that was critical to the Teesta-3 power station** (which is not operated by the NHPC). The Teesta-3 (1,200 MW) power project was the largest hydroelectric power project in the State until it was effectively grounded after the outburst. Only a tenth of the power originally being supplied by the project is now available. The Teesta-5 project, at 510 MW, has also been made non-functional since the glacial lake outburst.

The disaster shines a new light on an old, but never quiescent, conundrum posed by hydropower projects. From initial proposals nearly three decades ago to have 47 power projects along the run of the Teesta in Sikkim and West Bengal, only five projects exist and about 16 are in various stages of consideration. **A tributary of the Brahmaputra, the Teesta river originates from the Tso Lhamo Lake at an elevation of about 5,280 metres in north Sikkim. The river travels for about 150 km in Sikkim and 123 km in West Bengal, before entering Bangladesh from Mekhligunj in Cooch Behar district; it flows another 140 km in Bangladesh and joins the Bay of Bengal.** In theory, the river's course through undulating terrain is what tempts governments to extract as much benefit as possible for power projects. Through the decades, several companies have bid for projects auctioned out by State governments but the process has rarely been without complications. It has been a complicated exercise in balancing the environmental risks, costs of properly insuring for those risks, public perception and aiming for profit. In the case of the Teesta-3 project, reports have emerged that the developers, in order to save on costs, built **a concrete-faced rock fill dam as opposed to a concrete gravity dam** – one reason why it was completely washed away. **Environmental impact assessments of hydropower projects in the region must give a clear estimate of the actual costs involved.** This will not only bolster public faith in these projects but also be environmentally sustainable.

## Power play (22 August)

### Hydropower projects must factor in the environmental costs too

- Wayanad in Kerala is recovering from a recent landslide, while a new landslide in Sikkim caused damage to six houses and a building at the NHPC's Teesta-5 hydropower station in Gangtok.
- Unlike Wayanad, no lives were lost or injuries reported in Sikkim, but the landslide is still concerning because it's the second disaster to hit a hydropower project along the Teesta River recently.
- Last October, a **glacial outburst** from the South Lhonak glacier in North Sikkim destroyed the **Chungthang dam**, crucial to the Teesta-3 power station, which was the largest hydropower project in Sikkim.
- The Teesta-3 project, originally supplying 1,200 MW of power, is now only producing a tenth of its capacity. The Teesta-5 project (510 MW) is also non-functional after the disaster.
- These events highlight ongoing concerns about hydropower projects in the region. Initially, there were plans for 47 power projects along the Teesta River in Sikkim and West Bengal, but only five projects exist, with 16 others under consideration.
- The **Teesta River, a tributary of the Brahmaputra, originates in Tso Lhamo Lake at an elevation of about 5,280 metres in North Sikkim** and travels through Sikkim, West Bengal, and Bangladesh before joining the Bay of Bengal. The river's challenging terrain makes it attractive for power projects.
- However, developing these projects has been complicated by **environmental risks, insurance costs, public perception, and profitability concerns.**
- In the case of the Teesta-3 project, cost-cutting measures, such as building a less durable dam, contributed to its destruction.
- **Environmental impact assessments for hydropower projects** in the region need to accurately estimate the real costs to ensure public trust and environmental sustainability.

# Imports weaken Indian pharma

GS Paper III: External Sector

Ensuring the affordability of pharmaceuticals is essential for controlling healthcare costs, especially in India, where out-of-pocket health expenditures accounted for nearly 47.1% of the total health expenditure in 2021. While the Drugs Price Control Order, 2013, aims to regulate the prices of existing medicines, a better option is to establish a competitive environment for critical medicines by promoting local production. However, the government has taken two initiatives to meet domestic requirements through imports, which could have a chilling effect on the domestic industry.

The first was a Department of Expenditure (DoE) order permitting the Ministry of Health to procure 120 medicines through global tenders to supply Union government schemes. This list includes several top-selling anti-diabetes medicines and anti-cancer drugs. Currently, the companies selling these medicines enjoy a market monopoly in India, largely due to patent protection, regulatory barriers, or both. Moreover, for over 40 of these 120 medicines, the DoE order specifies a specific brand to be procured, implying that monopoly control of foreign companies would be enhanced.

Secondly, the 2024-25 Union Budget proposed removing the 10-12% customs duty on three cancer medicines marketed by AstraZeneca, ostensibly to reduce their prices. Given that some of these medicines are priced extremely high, the proposed import duty reduction would contribute little towards making them affordable.

These measures could seriously disincentivise domestic producers, making the country dependent on imports. More importantly, they could reinforce two entry barriers faced by the domestic industry, namely, the product patent regime and the regulatory guidelines for marketing approval of bio-therapeutics.



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Reliance on imports could have a chilling effect on the pharmaceutical industry, weakening its ability to remain relevant

New medicines are generally under patent protection, preventing Indian companies from producing affordable generics/biosimilars. Meanwhile, regulatory guidelines, which impose costly and time-consuming requirements for obtaining marketing approval of biosimilars, can adversely affect domestic producers. However, both these entry barriers can be overcome through proactive government action. The Patents Act has several public interest provisions which can be invoked to promote local production. Similarly, regulatory guidelines for marketing approval of bio-therapeutics can be suitably amended to reduce the burden on domestic companies.

Section 83 of the Patents Act states that “patents are granted to encourage inventions and to secure that the inventions are worked in India on a commercial scale and to the fullest extent that is reasonably practicable without undue delay” and that “they are not granted merely to enable patentees to enjoy a monopoly for the importation of the patented article”. It also states, “Patents are granted to make the benefit of the patented invention available at reasonably affordable prices to the public”. Substantive provisions enforce these key assertions, ensuring that while patent holders are guaranteed their rights under the Act, they cannot act in a manner that is prejudicial to the public interest.

If a patented medicine is “not available to the public at a reasonably affordable price,” compulsory licences (CL) can be granted to any company willing to make the product in India. Issuing CL is the most effective remedy to ensure affordability of medicines but it was issued only once. This was when the originator company was charging nearly three lakh for a medicine. Using CL, an Indian company produced for ₹8,000. However, despite the high prices of medicines, the Patent Office has not issued CL for any other medicine. The government opposed granting CL even during

the COVID-19 pandemic. This is in stark contrast to the stance of the U.S. government, which granted licences on multiple patents during the pandemic.

India’s Patents Act also permits the granting of government-use licences. Section 100 states, “patents granted do not in any way prohibit Central government in taking measures to protect public health”. Provisions under this section allow for the granting of government-use licences to enable domestic production of generic versions of patented medicines.

## Biosimilar guidelines

The guidelines for marketing approval of biosimilars in India are not only obsolete but also resource and time-intensive. For instance, the current guidelines require mandatory animal studies, which are no longer necessary even in developed countries with stringent regulatory standards, including the U.S. and the EU. Further, the WHO guidelines and the U.K. guidelines, for biosimilar marketing approval, treat clinical trial requirements as an exception rather than a rule, whereas the Indian guidelines still insist on mandatory clinical trials. These requirements create another barrier for Indian producers. In a recent press release, the International Generic and Biosimilar Medicines Association stated that “savings in time and resources from eliminating these duplicative requirements could have a meaningful impact on patient access.”

The proposed duty waiver on cancer medicines and global tendering for critical medicines undermine Parliament’s directives to improve access and affordability of medicines through domestic production, using the provisions of the Patents Act. Reliance on imports could have a chilling effect on the pharmaceutical industry, weakening its ability to remain relevant. The government needs to review its recent decisions, but more crucially, align its policies to support the growth of the domestic pharmaceutical industry.

## Imports weaken Indian pharma (22 August)

- Ensuring affordable pharmaceuticals is crucial for controlling healthcare costs in India, where out-of-pocket expenses made up 47.1% of total health spending in 2021.
- The Drugs Price Control Order, 2013, regulates the prices of existing medicines, but promoting local production to create competition for critical medicines might be a better solution.
- The government has initiated two measures that rely on imports, which could negatively impact the domestic pharmaceutical industry.

- First, the Department of Expenditure allowed the Ministry of Health to purchase 120 medicines through global tenders for Union government schemes, including popular anti-diabetes and anti-cancer drugs. These medicines are currently monopolized by certain companies in India due to patents or regulatory barriers.
- For over 40 of these 120 medicines, the government specified particular brands, likely increasing the monopoly of foreign companies.
- Second, the 2024-25 Union Budget proposed removing the 10-12% customs duty on three expensive cancer medicines marketed by AstraZeneca to reduce their prices. However, this duty reduction might not significantly lower their costs.
- These measures could discourage domestic producers and increase dependency on imports, while also reinforcing challenges faced by local companies, such as the product patent system and strict regulatory guidelines for bio-therapeutic marketing approval.
- **New medicines are usually under patent protection**, which stops Indian companies from producing affordable **generic versions or biosimilars**.
- Regulatory guidelines for marketing approval of biosimilars are expensive and time-consuming, making it difficult for domestic producers.
- These barriers can be addressed by proactive government action, using public interest provisions in the Patents Act and amending regulatory guidelines.
- **Section 83 of the Patents Act** says **patents should encourage inventions and ensure they are produced in India on a commercial scale without delay. Patents should not allow companies to monopolize imports.**
- The **Patents Act also states that patents should benefit the public by making inventions available at affordable prices.**
- The law allows for **compulsory licenses (CL) to be granted if a patented medicine is not available at a reasonably affordable price.** CLs let other companies produce the medicine in India.
- **CLs have only been issued once, despite high prices of many medicines. The Patent Office has not issued CLs for any other medicines, even during the COVID-19 pandemic.**
- The U.S. government issued multiple licenses during the pandemic, but the Indian government opposed CLs during the same period.
- Section 100 of the Patents Act allows the government to **issue government-use licenses to protect public health, enabling domestic production of generic versions of patented medicines.**

### Biosimilar guidelines

- The guidelines for marketing approval of biosimilars in India are outdated and require a lot of time and resources.
- For example, Indian guidelines mandate animal studies, which are no longer required in developed countries like the U.S. and the EU.
- Additionally, **while the WHO and U.K. guidelines for biosimilar approval treat clinical trials as optional, Indian guidelines still require mandatory clinical trials.**
- These outdated requirements make it harder for Indian producers to bring biosimilars to the market.
- The International Generic and Biosimilar Medicines Association has pointed out that removing these unnecessary requirements could help patients access medicines faster and at lower costs.
- Recent government decisions, like the **duty waiver on cancer medicines** and global tendering for critical medicines, go against Parliament's directives to improve access to affordable medicines through domestic production.
- Relying on imports could harm the domestic pharmaceutical industry, weakening its ability to compete and stay relevant.
- The government should reconsider these decisions and align its policies to support the growth of the domestic pharmaceutical industry.

## Were 8 crore new jobs created in three years? (22 August)

**Prime Minister Modi, based on the India-KLEMS database, claimed that India created “eight crore new jobs in the last three to four years”. However, analysts are questioning the methodology used to estimate these numbers. They argue that little meaningful employment was created in these years**

- Employment, or the lack of it, has been a major topic of debate in India.
- Recently, Prime Minister Narendra Modi claimed that India created 8 crore new jobs in the last three to four years.
- He based this claim on data from the **India-KLEMS database, which is hosted by the Reserve Bank of India (RBI).**
- According to this database, the number of workers in India increased from 56.6 crore in 2020-21 to 64.3 crore in 2023-24, a net rise of 7.8 crore workers.
- The State Bank of India (SBI) published a report that supported this claim, saying that the India-KLEMS data matched the employment figures from the NSSO's Annual Survey of Unincorporated Sector Enterprises (ASUSE), 2022-2023.
- However, many were surprised by the reported rise in employment, especially during and after the COVID-19 years.
- **The International Labour Organization (ILO) reported that the employment-to-population ratio was stagnant or declining in East Asia, South-East Asia, and the Pacific from 2019 to 2023.**
- Given these global trends, some analysts are skeptical about using the India-KLEMS database to claim that India is an outlier in job creation.
- The India-KLEMS project began as an academic exercise funded by the RBI in 2009, and the database is now hosted by the RBI.

- **KLEMS stands for Capital (K), Labour (L), Energy (E), Material (M), and Services (S).** The framework is used to measure "total factor productivity" (TFP), which mainstream economists consider a measure of the efficiency of all inputs in producing output.
- The main goal of the KLEMS framework is not to provide employment data. Employment figures are just inputs into the database's model.
- **The RBI does not directly collect data on employment or other inputs for the India-KLEMS database. Instead, it sources data from official sources like the Central Statistics Office, Census of India, Annual Survey of Industries, and the Periodic Labour Force Surveys (PLFS).**
- It is misleading to refer to these figures as "RBI jobs data" and use them to make political statements about employment generation in the economy.

### The method in India-KLEMS

- India-KLEMS uses employment data from the Periodic Labour Force Survey (PLFS), but it doesn't take the total number of workers directly from the survey.
- **PLFS provides the Worker Population Ratio (WPR),** which is the share of workers in the population.
- To estimate the total number of workers, India-KLEMS multiplies the WPR by the total population.
- **The problem arises because India doesn't have an official population count after the 2011 Census.**
- Normally, demographers estimate the population for the years between censuses by interpolating from the last Census. However, India-KLEMS took a different approach.
- For 2017-18 to 2019-20, India-KLEMS used population estimates from the Economic Survey (ES) 2021-22. These estimates assumed that the population growth rate after 2011 was the same as it was between 2001 and 2011.
- For 2020-21 to 2023-24, India-KLEMS switched to using population projections from a 2020 report by the Ministry of Health & Family Welfare (MoHFW), which used different methods considering factors like **fertility and mortality rates.**
- The inconsistency is that India-KLEMS didn't use the MoHFW's projections for all years, leading to potential inaccuracies.
- There are two main issues:
  1. Both the ES and MoHFW population projections do not account for the sharp decline in India's fertility rates over the past decade. For example, the Total Fertility Rate (TFR) in India fell to 2.0 in 2019-21, but the projections assumed a higher TFR.
  2. The projections don't separate rural and urban populations. India-KLEMS estimated these separately by assuming uniform growth rates for both, which is problematic because the rural population is growing more slowly than the urban population. This likely leads to an overestimation of the rural population.
- Because of these issues, the population figures used in India-KLEMS might be overestimated, leading to an overestimation of the number of workers in India.

### Shifts in employment structure

- The PLFS data is readily available, making it unclear why India-KLEMS data is being used for analyzing employment trends.
- **According to PLFS, India's Worker Population Ratio (WPR) decreased from 38.6% in 2011-12 to 34.7% in 2017-18 but then increased to 41.1% in 2022-23.**
- **The rise in WPR was mainly due to an increase in rural female WPR, which went up from 17.5% in 2017-18 to 30% in 2022-23.**
- The government made two claims: that crores of new jobs were created during and after the pandemic, and that women took over jobs vacated by men in rural areas.
- Both claims are flawed.
- **The increase in rural female WPR was mainly due to more rural women engaging in unpaid self-employment in agriculture.**
- Between 2018-19 and 2022-23, the percentage of rural women working in agriculture rose from 71.1% to 76.2%.
- The percentage of rural women who were self-employed increased from 67.8% to 78.1%.
- Among female agricultural workers, the share of those working only irregularly or on a minor scale (subsidiary employment) increased from 15.6% in 2018-19 to 27.7% in 2022-23.
- Within this group, about **65% were engaged in unpaid family work in 2022-23.**
- A rise in unpaid subsidiary work can artificially boost WPRs for women.
- When these higher WPRs are multiplied by an increasing population estimate, it can appear as though the total number of workers is steadily rising.
- Even if WPRs stayed constant, the projected population increase would still show a rise in worker numbers.
- This is reflected in the workforce figures in India-KLEMS, suggesting that there was little real growth in meaningful, paid employment after 2017-18.
- **The shift of men away from agriculture didn't significantly improve the situation for rural working women.**

### The ASUSE comparison

- The State Bank of India (SBI) report claims that the number of workers in India-KLEMS and ASUSE 2022-23 are roughly the same.
- **ASUSE only covers unincorporated non-agricultural establishments in manufacturing, trade, and other services.**
- **ASUSE explicitly excludes agricultural work and many manufacturing and trading establishments from its survey.**
- ASUSE reported 11 crore workers in these unincorporated non-agricultural establishments in 2022-23.

- The SBI report, however, estimates the total number of workers from ASUSE to be 56.8 crore, matching it with India-KLEMS figures.
- To reach this inflated figure, the SBI report likely added workers from sectors not covered by ASUSE, like agriculture, construction, registered factories, the corporate sector, government, and cooperatives, using other surveys with different methods.
- There is no scientific basis for combining these different sources to validate the India-KLEMS employment figures.
- In summary, India-KLEMS data, which was intended for different purposes and uses questionable methods, is being used to push a political narrative on job creation.
- The real issue is that the Government of India has not conducted the new Census, leading to the use of inaccurate population estimates.
- As a result, analysts and institutions rely on flawed projections, which politicizes economic debates and limits proper analysis of important trends in the Indian economy.

# Lack of industries in Bihar push youth to vie for government jobs

## JOB SCENARIO

### Amarnath Tewary

“Karo to sarkari naukari, nahi to becho tarkari” (do only government job, else sell vegetable), says Ranjeet Kumar (28), an unemployed youth, who, along with two female companions, spend three hours at a community park in Rajendra Nagar in Patna every evening to prepare for government jobs.

“Here in the park, there is a peaceful atmosphere to hold group discussions which help us prepare better for the job,” they echoed looking at the question bank for Bihar government’s Staff Selection Commission (SSC) exam.

Mr. Kumar had cracked the examination thrice but, somehow, couldn’t make it to the final list.

### ‘Huge pressure’

“Again I’m waiting for the final list, hoping to get through this time. Pressure from family to get a government job is so immense that for the last five years I’ve confined myself to a single room in Bahadurpur of Patna paying ₹6,000 as rent every month. He hails from Jhajha, some 300 km from Patna.

Asked why only a government job, Mr. Kumar sported a smile and responded quickly, “because there is nothing as permanent as a government job in the State and the country as well”.

Agreeing with him is Arpana Barnwal (26) who has come to Patna from Bokaro in the neighboring State of Jharkhand to prepare for a government job.

“Age is running out, not for job but for marriage”,



**Cause for concern:** Unemployment rate in Bihar was at 5.9%, higher than the national average of 4.1%, as per PLFS 2021-22. ANI

she giggled and the “family pressure to get a job as early as possible is so intense that I came to Patna for better opportunities to prepare for government jobs and here, there is 33% reservation in jobs for women,” she said.

She has to pay ₹3,500 as room rent in Patna’s Kazipur locality of Macchuatoli area. Her friend and companion Preeti Kumari (30), who is married, had also cracked main examination for Police Sub-Inspector (SI) post twice but, ‘unfortunately’ she too couldn’t make it to the final list.

She again is preparing for the job and unless she makes it to the final list, she asserted, she would keep trying for the government job.

### ‘Rare opportunities’

“I along with my husband, who too is preparing for a government job, have come from Begusarai district and live in a rented room at Bazaar Samiti area of Patna for better preparation,” she said, adding, “life is very very difficult without a government job in a place like Bihar where opportunities are very

rare.”

But what are these examinations? “We prepare for Bihar SSC, Bihar police -SI/Constable, Nursing, Teachers through Bihar Public Service Commission (BPSC), Assistant Section Officer in State Secretariat, Railways - loco-pilot and Group-D, National Thermal Power Corporation etc.,” they said.

What do they expect the government to do? “First, they should strictly maintain the job calendar, stop regular exam paper leaks and the number of jobs must be increased.”

### Filling up posts

According to State Budget for the financial year 2023-24, requisition has been given for filling a total of 63,900 posts by BPSC, SSC and the Technical Service Commission.

Approval has been accorded for the creation of 75,543 posts in State police services. According to the Periodic Labour Force Survey (PLFS) for the year 2021-22, unemployment rate in Bihar was at 5.9%, higher than the national average of 4.1%. For the 15-29 age group, the unem-

ployment rate was 20.1%, against the national average of 12.4%.

As per PLFS 20-21, the unemployment rate in the State was 4.6%. The Union government on July 29, cited data in Parliament stating Bihar had the lowest (25.6%) worker population ratio in 2021-22.

### ‘Lack of industries’

Former director of Patna-based A. N. Sinha Institute of Social Sciences D. M. Diwakar told *The Hindu* that “the major reason behind high unemployment rate in Bihar is the lack of industries. So, agriculture continues to have a crucial space in the State’s economy. Lack of employment opportunities have also pushed lakhs of migrants into leaving their native State for livelihood.”

### ‘No’ clarity

He also asserted there has not been any “clarity in government, neither of State nor at the Centre on job creation.”

“*Hindu rashtra banana hai to job create karne ki jarurat kya hai?* (when the agenda is to make Hindu nation, what is the need for job creation?),” he asked.

Economist and Associate Professor of Bihar Institute of Public Finance and Policy, Sudhanshu Kumar agreed, “employment scenario of the youth in the State was disturbing”.

“The youth of the State are mostly engaged in the informal economy and survive through subsistence self-employment or through casual jobs”.

“In urban areas, people settle for jobs that are way below their expertise, while disguised employment is common in rural Bihar,” he told *The Hindu*.



**Under attack:** Russian President Vladimir Putin leads a meeting with top defence officials on the situation in Kursk and Belgorod border regions, at Novo-Ogaryovo state residence on August 12. AP

## *Precise operation*



**Modern surgeon:** A child watches as a Shurui surgical robot, operated by a staff member from a console, performs 'surgery' on a dummy at the World Robot Conference in Beijing, China on Wednesday. REUTERS