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Stop illegal detentions, says SC amid crackdown in Delhi

Top court directs Centre, Delhi Police to ensure free movement of people 'subject to law and public order'; Saturday's conditions a 'step away from police state', says lawyer who was detained

Krishnadas Rajagopal
NEW DELHI

A day after mass detentions and a "curfew-like" clampdown on civil rights in Delhi, which senior lawyers compared to the 1975 Emergency, the Supreme Court convened what it called an "extraordinary, exceptional" Sunday hearing to direct the Union government and the Delhi Police to stop illegal detentions and allow free and smooth movement of people and traffic, as well as the operations of Metro and rail services, but "subject to law and public order".

A Special Bench of Justices Joymalya Bagchi and V. Mohana ordered the police to forthwith review the imposition of barricades

Special hearing

SC stresses need to uphold constitutional protections while preserving state's power to enforce reasonable restrictions

Directions to the police:

- Review imposition of barricades on public roads
- Ensure Internet connectivity is not disturbed
- No detentions except by law outside the 4-km prohibitory zone in Delhi
- Allow peaceful assembly outside the restricted zone



on public roads, ensure that Internet connectivity was not disturbed, and lift prohibitory orders issued under Section 163 of the Bharatiya Nagarik Suraksha Sanhita in and around the Supreme Court and other courts of law in the capital to help litigants access lawyers and justice.

The court did not explicitly comment on the legal

ity of the prohibitory orders.

State actions

Lawyers described a state crackdown that swept up thousands of people in an operation aimed at preventing them from gathering to demand the resignation of Chief Election Commissioner Gyanesh Kumar over alleged electo-

Rahul urges citizens to join march to SC

NEW DELHI

Congress leader Rahul Gandhi on Sunday appealed to all citizens to join the INDIA bloc's march to the Supreme Court to submit a memorandum to the CJI on the issue of alleged vote theft. » **PAGE 12**

ral irregularities. "Yesterday, we were one step away from a police state. Protect the right of citizens to peacefully protest in the capital city," senior advocate Shadan Farasat, who was dragged into a police van and detained for hours on Saturday, told the court.

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1. Right to Peaceful Protest versus Public Order

GS-2 — Fundamental Rights, Judiciary and Governance

Context: Delhi Police denied permission for a proposed Jantar Mantar protest on 10 October 2026 against alleged irregularities in the Special Intensive Revision (SIR) of electoral rolls. Subsequent detentions and restrictions on movement raised concerns about the balance between peaceful dissent, public order and civil liberties, prompting Supreme Court intervention on 11 October.

1. Issues Raised by the Crackdown

Restrictions on dissent: Denial of permission and detentions raised concerns about citizens' ability to peacefully question public institutions.

Public inconvenience: Barricades and restrictions on transport and internet access affected movement and access to essential services.

Security versus liberty: Authorities cited public-order concerns, but the legality and proportionality of restrictions became central questions.

2. Constitutional and Legal Framework

Article 19(1)(a): Protects freedom of speech and expression, including political dissent.

Article 19(1)(b): Guarantees peaceful assembly without arms, subject to reasonable restrictions under Article 19(3).

Article 21: Protects life and personal liberty against arbitrary State action.

Section 163, Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023: Allows preventive orders in urgent situations involving danger or threatened public tranquillity, but does not authorise arbitrary detention.

3. Important Supreme Court Judgments

Mazdoor Kisan Shakti Sangathan v. Union of India (2018): Protest rights must be balanced with residents' rights and public order.

Amit Sahni v. Commissioner of Police (2020): Public roads cannot be occupied indefinitely at the expense of other citizens.

Ramlila Maidan Incident v. Union of India (2012): Police action against protesters must respect fundamental rights and proportionality.

D.K. Basu v. State of West Bengal (1997): Established safeguards against arbitrary arrest and custodial abuse.

Maneka Gandhi v. Union of India (1978): Procedures affecting personal liberty must be just, fair and reasonable.

4. Supreme Court's Directions to Safeguard Fundamental Rights

Protection against Unlawful Detention: Ensure detention occurs only in accordance with law and applicable judicial directions.

Restoration of Public Movement: Review road barricades and restrictions affecting movement across Delhi.

Continuity of Essential Services: Ensure normal Metro and railway operations, subject to lawful security requirements.

Protection of Internet Connectivity: Avoid disruption of internet services except where legally justified.

Access to Justice: Prevent restrictions from obstructing access to courts and the lawful work of lawyers and journalists.

Accountability of Authorities: Seek explanations and compliance reports regarding alleged unlawful detentions and restrictions on public transport.

5. Way Forward

Proportionate Regulation: Prefer crowd limits, designated protest venues and traffic diversions over blanket restrictions.

Transparent Permissions: Establish clear criteria and provide reasoned decisions when refusing demonstrations.

Police Accountability: Ensure lawful detention procedures and investigate allegations of excessive force.

Protect Essential Services: Avoid unnecessary disruption to transport, internet connectivity and access to courts.

Effective Judicial Review: Provide timely remedies against arbitrary restrictions and violations of fundamental rights.

The gaps in the implementation of the RTI Act

Section 4 of the RTI Act lists 16 types of information which are to be disclosed by public authorities; such voluntary disclosure has not been followed

DATA POINT

Sneha Gandla
Gauri Singavarapu
Sachin Swaraj

The Right to Information (RTI) Act completed 21 years today. Besides empowering citizens to demand information from public authorities, a key aspect of the RTI Act is the provision for *suo motu* mandatory disclosure of a variety of information on their websites so that people do not have to resort to filing requests under the Act for accessing basic information regarding any department.

Section 4 (1) (b) of the Act lists 16 types of information, ranging from contact details of officials to budgetary expenditure, which are to be made public at regular intervals. Moreover, the Department of Personnel and Training has issued guidelines for the disclosure of additional information, under eight broad categories, in publishing information related to procurement, public-private partnerships, and all RTI applications received by each department. An analysis, however, showed that such voluntary disclosure has not been followed.

With the number of official websites of the Union government and State government covered under the thousands, the scope of this analysis is restricted to the departments listed as public departments, listed in the formanninon of Section 4 under the RTI Act and the departments listed in the formanninon of the Central Information Commission (CIC). The entire information covered under the RTI Act is not disclosed by the departments. The annual report for the year 2024-25 released earlier this year by the CIC says that of the 2,303 PAs from various departments re-

gistered with the Commission, only 1,446 had submitted third party audit reports, which is just 62.7% of the total registered (Table 1). Of those submitted, more than 50% scored Grade C or below, which meant that they had scored 80% or below in the transparency audit. Those with Grade E had scored below 60% in the audit. Though nearly 37% of the registered PAs did not submit the audit reports, a look at the trend in the last five years showed that the compliance has improved year-on-year (Chart 1). In 2020-21, only 754 had submitted. This doubled to 1,443 in 2024-25.

The Hindu independently verified the websites of the 94 departments under which these PAs come under. The guidelines recommend the uploading of the transparency audit reports on the websites. However, only 33 of the 94 websites had the audit reports for the year 2024-25. While a majority of them did not have the latest audit reports, a few had older reports. An analysis on the information that is to be mandatorily disclosed under the RTI Act showed that, of the 94 departments, 56 authorities, or 62% have complied with this section on most categories, and have information from 2025-26. The websites of 26 departments did not have the information covered under the Act. For the Ministry of Social Justice and Empowerment, there was no information available (Table 2). The remaining websites had either minimal or dated information on their websites.

Meanwhile, the number of new RTI requests and its pendency with the CIC has grown over the years (Chart 2). PAs should provide "as much information *suo motu* as possible so that the public have minimum resort to the use of this Act". The efficient implementation of Section 4 can not only improve transparency but also reduce the pendency piling up with the CIC and State Information Commissions.



In defense of transparency: Workers during the laying of the foundation of the National RTI Museum in Beawar, Rajasthan. SUSHIL KUMAR VERMA

1 Section 4(1) (b) of the RTI Act mandates *suo motu* disclosure of a range of information by every government authority

2 Public authorities covered under the Act are mandated to conduct independent transparency audits to ensure compliance with Section 4 (1) (b)

3 In 2024-25, only 62.3% of the public authorities had submitted these audit reports to the CIC

4 Most sites checked by The Hindu had disclosed only minimal information available

Voluntary non-disclosure

Data for the charts were sourced from the Central Information Commission (CIC) and websites of 94 government departments listed in the RTI portal of the Government of India. The authors are interning with The Hindu's Data team

Table 1: Number of public authorities (PAs) who submitted transparency audit reports to the CIC and their grades

Number of PAs	2,303
Audit report submitted to CIC	1,446
Grade A	410
Grade B	253
Grade C	302
Grade D	215
Grade E	266

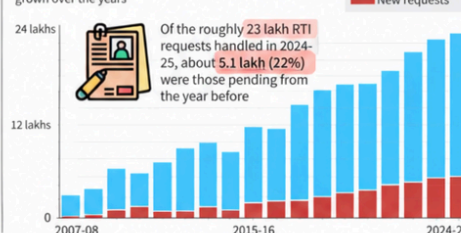
Table 2: Availability of transparency audit reports in the websites of 94 departments listed in the RTI portal

Compliance	No. of depts.
Report available with section-wise scores and required compliance classifications	33
Report available, but the latest recorded audit year is older	7
No report found in the portal material reviewed	43
While audit is mentioned or information is available, the full report or expected details are missing	7
Report reference, total score or audit mentioned without complete accessible report	3
Portal did not display the relevant audit information	1
Total	94

Chart 1: The number of public authorities (PAs) registered with the CIC and those who submitted the transparency audit reports to the Commission in the last five years



Chart 2: The number of RTI requests filed every year and the pendencies from previous years have consistently grown over the years



2. Gaps in the Implementation of the Right to Information Act, 2005

GS-2 — Constitution, Transparency, Accountability and Governance

Context: Despite 21 years of the Right to Information (RTI) Act, weak proactive disclosure, inadequate transparency audits and rising pendency continue to undermine citizens' access to public information.

1. Constitutional and Legal Framework

Article 19(1)(a): The Supreme Court recognises the right to know as integral to freedom of speech and expression.

Article 21: Access to relevant information supports the protection of life, liberty and welfare entitlements.

RTI Act, 2005: Empowers citizens to obtain information held by public authorities, subject to statutory exemptions.

Section 4 — Proactive Disclosure: Requires suo motu publication of 16 categories of information, including officials' duties, budgets, subsidies and decision-making procedures.

Sections 6–7: Govern filing of RTI requests and time limits for responses, generally 30 days.

Sections 19–20: Provide for appeals and penalties against Public Information Officers in specified cases of non-compliance.

2. Key Data and Implementation Gaps

Incomplete audit compliance: Only 1,446 of 2,303 registered public authorities (62.7%) submitted third-party transparency-audit reports.

Departmental shortcomings: Of 94 departments examined, only 33 had 2024–25 audit reports available; 43 had no report found on the portal.

Poor proactive disclosure: Only 56 of 94 departments (about 60%) complied across most categories; 26 departments' websites lacked mandated information.

Rising pendency: Around 23 lakh RTI requests were handled in 2024–25, including 5.1 lakh (22%) pending from the previous year.

Weak implementation: Outdated records, incomplete websites and inadequate monitoring force citizens to seek information individually.

Governance impact: Delayed access weakens scrutiny of public expenditure, welfare delivery, procurement and administrative decisions.

3. Why Section 4 Is Crucial

Transparency by default: Citizens should not have to file applications for information that authorities are required to publish.

Reduced corruption: Disclosure of budgets, subsidies and procurement enables public scrutiny and deters misuse of power.

Administrative efficiency: Proactive disclosure reduces repetitive applications and pressure on Information Commissions.

Participatory governance: Timely information enables citizens and civil society to evaluate government performance.

4. Way Forward

Enforce Section 4: Publish all mandated information regularly, with clear departmental responsibility and deadlines.

Strengthen audits: Conduct independent audits, publish findings and correct deficiencies within fixed timelines.

Improve digital transparency: Maintain updated, searchable and accessible government portals and records.

Reduce pendency: Address vacancies, improve case management and strengthen Information Commissions.

Ensure accountability: Apply statutory penalties where warranted and monitor department-wise compliance.

Balance transparency and privacy: Protect legitimate personal information without allowing exemptions to become blanket grounds for secrecy.



Norway is not alone in addressing privacy risks surrounding wearable devices, as a patchwork of regulations and venue-specific restrictions are in progress across Europe and North America. REUTERS

Why is Norway considering a temporary smart glasses ban?

Norway is proposing temporary restrictions on smart glasses in public, sensitive spaces over concerns about covert recording, facial recognition and violations of privacy, as other countries explore similar curbs; this could affect device sales and push manufacturers to strengthen privacy safeguards

Haider Ali Khan

The story so far:

European regulators are training their sights on smart glasses, as the wearable device equipped with high-definition cameras, ambient audio recording, and artificial intelligence is becoming common in Europe, blurring the lines between technological innovation and citizens' privacy.

Norway is taking the lead as its government prepares a proposal seeking a temporary ban on smart glasses in select public and sensitive locations. Led by Minister of Digitalisation and Public Governance Torger Micaelsen, the initiative pauses device usage in places where individuals expect personal privacy.

What does the proposal seek?

The temporary restrictions target places frequented by children, including schools, playgrounds, and youth clubs, healthcare facilities, fitness centres, lecture rooms, public beaches, parks, museums, and concert venues. Crucially, the government is not proposing a ban on sales of the devices or prohibiting their use in private.

Instead, the proposal is asking an expert committee to evaluate the technological challenges and formulate lasting legal frameworks. Oslo has already banned smart glasses across municipal schools.

The core argument behind Norway's intervention centres on the lack of consent in public spaces. Traditional smartphones require users to visibly hold up a device to record video or snap photos, providing a clear signal to surrounding people. In contrast, smart glasses allow wearers to capture

high-resolution imagery, record ambient audio, or live-stream video directly at eye level without offering clear cues to bystanders.

This creates a surveillance system where citizens cannot easily determine whether they are being recorded. Privacy risks are especially acute in sensitive settings like changing rooms and medical clinics, or where unauthorised filming of children raises safety concerns.

Furthermore, officials have highlighted risks surrounding real-time facial recognition software. When combined with AI eyewear, facial recognition could enable wearers to instantly identify strangers, access personal data, or facilitate doxxing. Norway's proposed rules acknowledge that traditional privacy frameworks were not designed for head-worn, ambient recording technology.

Is any other country attempting a similar moratorium?

Norway is not alone in addressing privacy risks surrounding wearable devices, as a patchwork of regulations and venue-specific restrictions are in progress across Europe and North America.

In the Netherlands and Germany, eyewear retailer Hans Anders suspended sales of Meta's Ray-Ban smart glasses across its Dutch and Belgian stores while awaiting regulatory clarity. Dutch lawmakers have discussed rules that await guidance from the European Data Protection Board (EDPB). Meanwhile, Hamburg is exploring regional restrictions.

The UK Cinema Association established guidelines restricting or prohibiting camera-equipped glasses in movie theatres to combat piracy and protect the privacy of viewers. Additionally, courts in England and Wales require visitors to

surrender smart glasses at security checkpoints.

In the United States, several nightclubs, gyms, and courts in New York have implemented localised bans. California's governor vetoed legislation penalising covert recording in private spaces, but debate continues among state policymakers on next steps.

In Bangkok, smart glasses use is restricted in certain pubs and public places.

How are manufacturers of smart glasses adapting to this regulatory landscape?

To address privacy concerns, hardware manufacturers have built technical safeguards into current-generation devices. Devices such as Ray-Ban Meta glasses feature a white light-emitting diode (LED) on the frame beside the lens. The LED blinks when capturing photos and stays lit continuously during video recording.

Manufacturers have deployed firmware updates that detect if the LED indicator is covered or obstructed. If light obstruction is detected, the system automatically disables the camera's functionality.

Devices enforce caps on continuous recording duration and play audible shutter sounds when taking photos.

But privacy advocates have said that small LED lights remain difficult to spot in bright, sunlit conditions or crowded environments, rendering hardware safeguards insufficient for complete bystander protection.

How will the moratorium impact device sales?

Although Norway's proposal focuses on restricting device usage rather than banning sales, the commercial impact on manufacturers could be substantial. The

primary selling point of smart glasses is their seamless integration into daily public life. Restricting their use in public spaces like parks, beaches, shopping centres, and fitness clubs undermines their utility, rendering a versatile daily-use accessory into a device restricted to home use.

In addition, voluntary retail suspensions such as the sales halt by Hans Anders create immediate revenue hits in the European market. Regulatory uncertainty across different regions introduces consumer hesitation, discouraging buyers who worry about purchasing expensive hardware that might soon face usage restrictions in public.

How might smart glasses makers tweak functionality?

To comply with evolving privacy standards and maintain consumer trust, manufacturers may likely re-engineer both hardware and software features by implementing larger, brighter, or colour-shifting LED indicators, alongside louder audio signals that cannot be silenced.

Software updates could incorporate AI-driven face-blurring and audio pitch modification, redacting bystander identities before footage is saved or streamed. Smart glasses could utilise GPS data to automatically disable recording capabilities when entering designated privacy zones like schools, hospitals, or locker rooms. Manufacturers can explicitly block facial recognition software and APIs to prevent real-time profiling in public spaces.

Companies are expanding lines to include audio-focused smart glasses without cameras (such as Ray-Ban Meta Audio), catering to users who want AI features without privacy concerns.

3. Smart Glasses: Privacy Risks and Regulatory Challenges

GS-2 — Fundamental Rights and Governance; GS-3 — Science and Technology

Context: Norway is considering temporary restrictions on smart glasses in selected public and sensitive spaces due to risks of covert recording, facial recognition and privacy violations.

1. Smart Glasses: Technology and Concerns

Technology: Wearable devices with cameras, microphones, internet connectivity and Artificial Intelligence (AI) features for recording, communication and real-time assistance.

Privacy violations: Discreet recording can capture people without their knowledge or consent, undermining privacy in public spaces.

Facial recognition: AI may identify strangers and collect personal information without consent.

Sensitive locations: Schools, hospitals, changing rooms and locker rooms face heightened risks of unauthorised recording.

Data misuse: Recorded images, audio and personal information may be stored, shared or exploited; small recording indicators may be difficult to notice.

2. Regulatory Challenges

Legal gaps: Existing privacy frameworks may not adequately address discreet, AI-enabled wearable recording.

Global responses: Norway is considering targeted restrictions; other jurisdictions are exploring venue-specific rules and privacy safeguards.

Limited safeguards: Recording lights and software controls can help, but cannot fully prevent covert misuse or protect bystanders.

3. Way Forward

Privacy by design: Require clear recording indicators and easy camera/microphone controls.

Sensitive-space restrictions: Prohibit unauthorised recording in locations where privacy expectations are high.

Data protection: Minimise collection, restrict retention and prevent unauthorised sharing.

Accountable AI: Regulate facial recognition and provide effective remedies against misuse.

Proportionate regulation: Balance innovation and accessibility benefits with privacy, security and individual autonomy.

Global warming is turning sex reversal in frogs into extinction risk

Sex reversal is well documented in the animal kingdom, where an individual can begin life with one sex and later switch to another, but a warming planet is making these changes more frequent; in a population skewed towards one sex, individuals may run out of mates to reproduce with

Rupsy Khurana
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Some fish can switch sex more than once over a lifetime. In lizards, genetically male hatchlings can be born looking and functioning as females. In some frogs, genetically female individuals can develop into fertile males.

This phenomenon is called sex reversal. It is well documented in the animal kingdom, from invertebrates to amphibians to birds, where an individual can begin life with one sex and later switch to another.

But a warming planet is making these changes more frequent and potentially more consequential for animals. In a population skewed towards one sex, individuals may run out of mates to reproduce with, slowing population growth, reducing genetic diversity, and ultimately raising the risk of extinction.

Agile frogs

Around 40% of amphibian species face the risk of extinction, which makes them the most threatened vertebrates on the earth. As temperatures continue to climb, scientists are asking whether increased sex reversal could affect the long-term survival of amphibian populations.

To answer this, a group of researchers turned to agile frogs in Hungary. They found that sex-reversed wild males sire fewer offspring – which are in turn more vulnerable to heat and infectious disease. These disadvantages could together speed up population declines as the planet keeps warming.

The results were published in *Science Advances* on September 3.

In agile frogs as in mammals, the sex at birth is determined by chromosomes. Two X chromosomes make a genetic female whereas an X and a Y make a genetic male. But excessive heat in the tadpole stage can override that genetic recipe and turn some genetically female tadpoles into physically normal and fertile male tadpoles.

"Theoretical models suggest that this threat can be mitigated, up to a certain severity of climate change, for example XX males siring all-XX offspring," said Veronika Bokonyi, the study's lead author and researcher at the HUN-REN Centre for Agricultural Research. However, "this mitigating effect *Empidonax griseus* included mitigating effect can be lost if sex-reversed individuals cannot participate in reproduction."

Chance of mating

Bokonyi *et al.* first looked at whether animals whose sex differs from their genetic sex reproduce just as successfully in the wild. They paired 20 sex-reversed males with 20 sex-concordant males, matched for body size and arrival time at affect mating success. They let each male mate with a female.



A 2017 photograph of an agile frog in the wild. As temperatures continue to give scientists are asking whether increased sex reversal could affect the long-term survival of amphibian populations. PETAR MILOŠEVIĆ (CC BY-SA)

The team then tracked whether the female laid eggs, how long it took, and whether the eggs developed into tadpoles.

The team found that sex-reversed males were just as capable of winning mates and fertilised eggs did develop into tadpoles. However, sex-reversed males did not have an equal chance at mating. About one-third of females paired with sex-reversed males laid only part of their eggs, called the split clutch strategy in which they saved the rest for a better mate.

In an experimental set-up, females had no choice, so sex-reversed males could still coerce the female into mating and sire a clutch. "Had they been free in a real mating aggregation, this could have allowed the female to find another male who could replace the sex-reversed male by fighting," Dr. Bokonyi said.

Artificial heatwave

So the researchers turned to breeding ponds in the wild. They sampled more than a hundred egg masses from 16 different populations and found that even though the sex-reversed male agile frogs made up roughly 20% of the wild populations, only 4% of egg clutches belonged to them.

"This suggests that when the frogs mate freely, the sex-reversed individuals are not as successful at becoming sires as the sex-concordant males," Dr. Bokonyi said.

The few offspring they did sire were also not in the clear. As researchers

tracked the development of lab-reared tadpoles, they found that 61% of the offspring of sex-reversed males underwent sex reversal, developing as males despite being genetically female. Only 17% of offspring of sex-concordant males did, however.

"We were suspicious that sex reversal might have negative consequences on individual fitness and on population viability," Dr. Bokonyi said.

A warming climate is also amplifying the threat of infectious diseases. The pathogen ranavirus is of particular concern: in some instances, it has wiped out more than 90% of tadpoles in a single event.

To understand how well these offspring could withstand such climate-driven stressors, researchers exposed eggs from sex-reversed and sex-concordant males to an artificial heat wave along with ranavirus. Under high temperatures, tadpoles of sex-reversed males carried higher viral loads.

With lower paternity, higher rates of sex reversal in offspring, and greater disease susceptibility all being plausible outcomes, the team turned to computer models to test how these combined pressures could affect wild agile frog populations.

Higher extinction risk

"What happens in the laboratory and what occurs in the field are two different matters, and the strength of this study lies in the assessment of the impact of sex reversal in the wild," University of

Canberra professor Arthur Georges, who was not involved in the study, said.

Their results showed small populations were especially vulnerable, since losing even a few breeding females could affect a population's ability to reproduce.

While some populations may already have begun declining, others could disappear within 60 to 70 years as heat-driven sex reversal pushed populations towards more males with fewer females to mate with.

When the model factored in the mortality from ranavirus among the offspring of sex-reversed males, population decline began roughly 10 years earlier and extinction came about 9.5 years sooner.

Without ranavirus, populations still declined about eight years earlier – but the extinction occurred only about two years earlier.

"We, as scientists, underestimate the number of sex-reversed individuals in populations and species," Dominique Potvin, associate professor at the University of the Sunshine Coast, Australia, said.

She added that scientists need to know how the environment is affecting sex reversal and affecting the long-term survival of species to update their interpretations and management strategies for conservation.

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THE GIST

▼ In agile frogs as in mammals, the sex at birth is determined by chromosomes: two X chromosomes make a genetic female whereas an X and a Y make a genetic male

▼ But excessive heat in the tadpole stage can override that genetic recipe and turn some genetically female tadpoles into physically normal and fertile male tadpoles

▼ Researchers have found that sex-reversed male agile frogs in the wild sire fewer offspring – which are in turn more vulnerable to heat and infectious disease

▼ These disadvantages could together speed up population declines as the planet keeps warming

4. **Global Warming, Sex Reversal in Frogs and Extinction Risk**

GS-3 — Environment, Biodiversity, Climate Change

Context: Sex reversal occurs naturally in some animals, but rising temperatures can increase its frequency in certain amphibians, potentially disrupting reproduction and accelerating population decline.

1. **Sex Reversal: Natural Phenomenon or Climate Threat?**

Meaning: Sex reversal occurs when an animal develops a biological sex different from that expected from its genetic sex.

Natural occurrence: It is documented across the animal kingdom. Some fish change sex naturally, while certain reptiles and amphibians can develop a sex that differs from their genetic predisposition.

Sex determination in frogs: In many frogs, sex is influenced by sex chromosomes, but environmental conditions—particularly temperature during early development in some species—can affect sexual development.

Key distinction: Sex reversal itself is not necessarily harmful. The concern arises when climate change makes it more frequent or causes an imbalance in the number of reproductive males and females.

2. **How Global Warming Increases the Risk**

Higher temperatures: Heat during tadpole development can override genetic sex determination in temperature-sensitive species, causing genetically female tadpoles to develop as males.

Skewed sex ratios: An excess of males can reduce the availability of females for breeding, limiting successful reproduction.

Lower reproductive success: The reported study on agile frogs in Hungary found that sex-reversed males produced fewer offspring than expected, despite being capable of mating.

Greater disease vulnerability: Sex-reversed males were more vulnerable to heat and ranavirus infection, potentially increasing mortality.

Accelerated population decline: Heat stress, reduced reproduction and disease can reinforce one another, posing a greater threat to small or already declining populations.

3. Key Research Findings

Fewer offspring: In the reported experiments, only 17% of offspring from sex-reversed males developed as males despite being genetically female; the study also found reduced reproductive success.

Breeding disadvantage: Only 4% of egg clutches in the sampled wild population belonged to sex-reversed males.

Disease impact: In one experimental infection event, ranavirus wiped out more than 90% of tadpoles in a single group. This illustrates the potential severity of disease, not a universal mortality rate for sex-reversed frogs.

Earlier extinction risk: Population modelling suggested that heat-driven sex reversal could bring extinction forward by about 9.5 years in the modelled scenario.

4. Ecological Significance and Way Forward

Biodiversity: Amphibians are already threatened by habitat loss, pollution, climate change and infectious diseases.

Ecosystem stability: Frog population declines can disrupt food webs and natural insect control.

Conservation: Protect wetlands and breeding habitats, maintain cooler refuges and monitor sex ratios and disease prevalence.

Climate action: Reduce greenhouse gas emissions while strengthening long-term monitoring of climate-sensitive species.

'Indo-French satellite set for launch in 12-16 months'

The Hindu Bureau

BENGALURU

The Indo-French satellite TRISHNA (Thermal Infra-Red Imaging Satellite for High-resolution Natural Resource Assessment) will be launched in the next 12-16 months, said Jasvinder Singh Khoral, Director (Projects) of the Indian Space Research Organisation's U.R. Rao Satellite Centre (URSC), on Sunday.

He said this was the third satellite that India and France were developing after Megha-Tropiques and SARAL (Satellite with ARGOS and ALTIKA) satellites. "This particular project has been around for a decade or so in its conceptualisation and formalisation. Now it has come to the realisation stage. It is at a point where, in the next 12-16 months, we will be due for launch," Mr. Khoral said while speaking at the TRISHNA Water for Tomorrow workshop.

The TRISHNA mission is a collaborative endeavour between the ISRO and the French space agency CNES.

5. Indo-French TRISHNA Satellite Mission: Earth Observation and Natural Resource Management

GS-3 — Science and Technology, Space Technology, Environment

Context: India and France are developing the TRISHNA satellite to monitor land-surface temperature, vegetation health and water consumption. According to the report, launch is expected within 12–16 months, with 2027 as the projected launch year, subject to change.

1. About the TRISHNA Mission

1. **Joint collaboration:** Developed by the Indian Space Research Organisation (ISRO) and France's National Centre for Space Studies (CNES).

2. **Technology:** Uses high-resolution thermal infrared imaging to measure land-surface temperature and identify variations in heat across different landscapes.

3. **Primary objective:** Generate detailed observations of land, vegetation and water-related processes to improve natural-resource management and environmental monitoring.

2. Major Applications

1. **Agriculture:** Detect crop water stress, identify irrigation requirements and improve water-use efficiency.

2. **Water management:** Estimate evapotranspiration—the transfer of water to the atmosphere through evaporation and plant transpiration—helping assess water consumption by crops and ecosystems.

3. **Climate monitoring:** Track surface heating, drought stress and changes in ecosystem functioning.

4. **Urban heat islands:** Identify unusually hot urban areas and support heat-mitigation planning.

5. **Ecosystem conservation:** Monitor vegetation health and assess environmental stress affecting natural landscapes.

3. India–France Space Cooperation

TRISHNA builds on two earlier joint satellite missions:

- 1. Megha-Tropiques:** Studies the tropical atmosphere and water cycle, including clouds, humidity and precipitation.
- 2. SARAL:** Supports oceanographic research, particularly sea-level measurement and ocean circulation, using satellite altimetry.
- 3. TRISHNA:** Extends bilateral cooperation towards detailed thermal observation of land and natural resources.

4. Significance for India

- 1. Water security:** Scientific estimates of water consumption can support irrigation planning and conservation.
- 2. Climate resilience:** Early identification of crop and vegetation stress can strengthen drought preparedness and adaptation.
- 3. Sustainable agriculture:** Helps improve irrigation efficiency and supports data-driven agricultural decisions.
- 4. Strategic cooperation:** Strengthens India–France collaboration in advanced satellite technology and Earth observation.

Russia and Ukraine agree to 'energy ceasefire': Trump

Associated Press

WASHINGTON

U.S. President Donald Trump said on Sunday that Russia and Ukraine had agreed to an "energy ceasefire", but offered no details on its terms.

Mr. Trump's brief social media post said only that the ceasefire took effect immediately and that both sides had agreed to it. "Do not break it!" he wrote.

Ukrainian President Volodymyr Zelenskyy said on X: "We discussed the energy ceasefire announced by President Trump. Ukraine supports the ceasefire, and it is important that Russia support it as well. We are awaiting details from the American side."

Moscow did not immediately comment on the announcement, and The White House did not clarify the President's post.



Donald Trump

However, Mr. Zelenskyy later said that Russia had attacked an energy plant after Mr. Trump announced the "energy ceasefire" between the two countries. "The Russians struck a power plant in Kyiv with a 'shahed' drone," Mr. Zelenskyy said in a social media post, adding that strikes on other energy facilities followed in the Kharkiv region.

Mr. Zelenskyy, in an interview aired on Sunday, said Ukraine was ready to

stop striking Russian refineries if Moscow halted attacks on Ukraine's energy system, and asked Mr. Trump to press the Kremlin to agree.

Mr. Trump said on Saturday it was time for Ukraine to get a new president, suggesting Mr. Zelenskyy has not done enough to end the war and blaming him for high diesel prices in the U.S.

In response, Mr. Zelenskyy said Ukraine could hold elections if Russia agreed to a 60-day ceasefire. "Give us two months, 60 days off. Total ceasefire, 60 days, and we will organize elections," he said, adding that Ukraine would be ready to accept whatever choice its people made.

"With all respect to President Trump, it's up to our society, up to our people to choose one or another leader," he said.

6. Russia-Ukraine War: Proposed Energy Ceasefire and Diplomatic Uncertainty

Context: On 11 October 2026, U.S. President Donald Trump announced an immediate energy ceasefire between Russia and Ukraine. However, the absence of confirmed terms and reports of continued attacks raised doubts about its implementation.

1. Recent Developments and Responses

1. **United States:** Trump announced that both countries had agreed to stop attacks on energy infrastructure, without specifying the duration or enforcement mechanism.
2. **Ukraine:** President Volodymyr Zelenskyy initially described the announcement as unexpected and sought clarification from Washington. He subsequently expressed support for the proposal.
3. **Russia:** Moscow had not publicly confirmed acceptance of the proposed arrangement at the time of reporting.
4. **Reported Russian attacks:** Ukraine reported drone and glide-bomb attacks on energy infrastructure in Kyiv and Kharkiv after Trump's announcement.
5. **Ukraine's position:** Zelenskyy said Ukraine was prepared to halt attacks on Russian energy infrastructure if Russia reciprocated.

2. Duration and Status of the Ceasefire

1. **Effective date:** Trump announced that the ceasefire would take effect immediately on 11 October 2026.
2. **Duration:** No fixed duration or expiry date was publicly specified.
3. **Scope:** The announcement referred to energy infrastructure but did not publish a detailed list of protected facilities.
4. **Separate 60-day proposal:** Zelenskyy separately proposed a 60-day general ceasefire to enable elections in Ukraine. This was not the stated duration of the energy ceasefire.
5. **Implementation:** The arrangement could not be considered a mutually confirmed, operational ceasefire without clear commitments and evidence of compliance.

3. Strategic Significance

1. **Civilian protection:** Preventing attacks on power plants and electricity networks protects heating, healthcare, water supply and other essential services.
2. **Winter preparedness:** Damage to energy infrastructure could worsen humanitarian conditions as temperatures fall.

- 3. Economic stability:** Reduced attacks could limit infrastructure losses, fuel disruptions and pressure on energy markets.
- 4. Reciprocal restraint:** A verified agreement could reduce retaliatory attacks on strategic energy assets.
- 5. Diplomatic confidence:** Successful implementation could provide a foundation for broader negotiations, although it would not resolve territorial disputes or the underlying causes of the war.