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THE HINDU NEWSPAPER

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GS Paper 1: History	04 November 2026
TOPICS COVERED	
04N11	Egyptian mummy portraits to come alive in Rome show रोम की प्रदर्शनी में जीवंत होंगे मिस्र के ममी चित्र

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Egyptian mummy portraits to come alive in Rome show

Agence France-Presse

GS I: History: WH

An elegant woman gazes out from her portrait with expressive eyes, a gilded wreath worn in her hair and a gentle, questioning look on her face.

She is one of the 2,000-year-old "Faces of Fayum", startlingly realistic funerary - or mummy - portraits painted after Egypt became part of the Roman empire.

The fragile portraits dating from the first to third centuries AD – painted on thin wooden panels and designed to be placed over the face of mummies – will go on display in Rome in what organisers hail as a "milestone" collaboration between Italy and Egypt.

"Egypt and Rome, the Faces of Fayum", opening on Wednesday at Rome's Ara Pacis museum, also includes mummies, masks, shrouds, jewellery, marble busts, and statuary. The majority of the artefacts come from Egypt, with some allowed to leave the country for the first time.

Such is the case of the "Tondo of the Two Brothers" from Cairo's Egyptian Museum, a freshly restored double portrait from the time of Emperor Hadrian that depicts two curly-haired young men, possibly brothers, with soulful eyes.

Rome's top official for cultural heritage, Claudio Parisi Presicce, called the work an "absolute masterpiece, perhaps the most important pictorial work to have survived from antiquity".

"These are simple wooden panels, often just a few millimetres thick, made of wood... and they were used to depict, through extremely naturalistic painting, the faces of the individuals who were being buried," Mr. Parisi Presicce said.

Rooted in the tradition of Hellenistic painting, the portraits placed over the head of the mummy and secured into its wrappings come from a relatively brief period between the first and third centuries AD, after Egypt became a province of Rome.

In a fusion of two great civilisations - Egyptian and Roman - the men, women and children portrayed often bear Egyptian features, but wear Roman dress. The exhibition runs until May 2.

04N11. Egyptian mummy portraits to come alive in Rome show

रोम की प्रदर्शनी में जीवंत होंगे मिस्र के ममी चित्र

- An elegant woman gazes out from her portrait with expressive eyes, a gilded wreath worn in her hair and a gentle, questioning look on her face.

एक सुरुचिपूर्ण महिला अपने चित्र से बाहर देखती प्रतीत होती है—उसकी आँखें भावपूर्ण हैं, बालों में सोने की परत चढ़ी पुष्पमाला है और चेहरे पर कोमल, सवालिया भाव है।

- She is one of the 2,000-year-old **"Faces of Fayum"**, startlingly realistic funerary — or mummy — portraits painted after Egypt became part of the Roman empire.

वह 2,000 वर्ष पुराने **"फैयूम के चेहरों"** में से एक है—अंत्येष्टि के लिए बनाए गए, यानी ममी पर लगाए जाने वाले, आश्चर्यजनक रूप से यथार्थवादी चित्र, जिन्हें मिस्र के रोमन साम्राज्य का हिस्सा बनने के बाद बनाया गया था।

- The fragile portraits dating from the first to third centuries AD — painted on thin wooden panels and designed to be placed over the face of mummies — will go on display in Rome in what organisers hail as a "milestone" collaboration between Italy and Egypt.

पहली से तीसरी शताब्दी ईस्वी के ये नाज़ुक चित्र—जो लकड़ी की पतली पट्टियों पर बनाए गए थे और ममी के चेहरे पर रखने के लिए तैयार किए गए थे—रोम में प्रदर्शित होंगे। आयोजकों ने इसे इटली और मिस्र के बीच सहयोग का "मील का पत्थर" बताया है।

- "Egypt and Rome, the Faces of Fayum", opening on Wednesday at Rome's Ara Pacis museum, also includes mummies, masks, shrouds, jewellery, marble busts, and statuary.

"मिस्र और रोम: फैयूम के चेहरे" नाम की यह प्रदर्शनी बुधवार को रोम के आरा पाचिस संग्रहालय में खुलेगी। इसमें ममियाँ, मुखौटे, कफ़न, आभूषण, संगमरमर की अर्ध-प्रतिमाएँ और मूर्तियाँ भी शामिल हैं।

- The majority of the artefacts come from Egypt, with some allowed to leave the country for the first time.

अधिकांश कलाकृतियाँ मिस्र से लाई गई हैं; उनमें से कुछ को पहली बार देश से बाहर ले जाने की अनुमति मिली है।

- Such is the case of the **"Tondo of the Two Brothers"** from Cairo's Egyptian Museum, a freshly restored double portrait from the time of Emperor Hadrian that depicts two curly-haired young men, possibly brothers, with soulful eyes.

काहिरा के मिस्री संग्रहालय से लाया गया **"दो भाइयों का टोंडो"** ऐसा ही एक उदाहरण है। यह सम्राट हैड्रियन के समय का हाल ही में पुनर्स्थापित दोहरा चित्र है, जिसमें घुँघराले बालों वाले दो युवा पुरुष—संभवतः भाई—भावपूर्ण आँखों के साथ दिखाए गए हैं।

- Rome's top official for cultural heritage, Claudio Parisi Presicce, called the work an "absolute masterpiece, perhaps the most important pictorial work to have survived from antiquity".

रोम के सांस्कृतिक धरोहर विभाग के सर्वोच्च अधिकारी क्लाउडियो पारीसी प्रीसिचे ने इस कृति को "एक उत्कृष्ट कृति—संभवतः प्राचीन काल से बची सबसे महत्त्वपूर्ण चित्रकला" बताया।

- "These are simple wooden panels, often just a few millimetres thick, made of wood... and they were used to depict, through extremely naturalistic painting, the faces of the individuals who were being buried," Mr. Parisi Presicce said.

श्री पारीसी प्रीसिचे ने कहा, "ये लकड़ी की साधारण पट्टियाँ हैं, जो अक्सर केवल कुछ मिलीमीटर मोटी होती हैं...

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इन पर अत्यंत यथार्थवादी चित्रकारी के ज़रिए उन लोगों के चेहरे बनाए जाते थे जिन्हें दफ़नाया जा रहा होता था।"

- Rooted in the tradition of Hellenistic painting, the portraits placed over the head of the mummy and secured into its wrappings come from a relatively brief period between the first and third centuries AD, after Egypt became a province of Rome.
  हेलेनिस्टिक चित्रकला की परंपरा से निकले ये चित्र ममी के सिर पर रखे जाते थे और उसकी पट्टियों में बाँध दिए जाते थे। ये पहली से तीसरी शताब्दी ईस्वी के अपेक्षाकृत छोटे कालखंड के हैं, जब मिस्र रोम का एक प्रांत बन चुका था।
- In a fusion of two great civilisations — Egyptian and Roman — the men, women and children portrayed often bear Egyptian features, but wear Roman dress.
  मिस्र और रोम की दो महान सभ्यताओं के संगम को दर्शाते इन चित्रों में पुरुषों, महिलाओं और बच्चों के चेहरे अक्सर मिस्री विशेषताओं वाले हैं, लेकिन उनके वस्त्र रोमन हैं।
- The exhibition runs until May 2.
  यह प्रदर्शनी 2 मई तक चलेगी।

"These portraits show how people could follow Egyptian burial customs while adopting Greek artistic techniques and Roman fashions."

"Today, we preserve someone's memory through photographs. Nearly 2,000 years ago, some people in Egypt used painted portraits as part of their burial arrangements."

These were paintings, not photographs. Their strikingly lifelike appearance makes the people seem familiar even today.



A photo shows a mummy-shaped coffin attributed to 2,000-year-old remains of Giupra, a young girl. AFP

What a Mummy Portrait Is

Term	Simple meaning
Mummy	A preserved human or animal body.
Mummification	The process used to preserve the body after death.
Mummy portrait	A painted likeness placed over the face area of a wrapped mummy.

"A wrapped mummy with a carefully painted wooden portrait positioned where its face would be."

The portrait was usually secured within the wrappings. Surviving examples demonstrate this arrangement.

Fayum on a Map

- **Egypt**, in northeastern Africa.
- **Cairo**, near the Nile Delta.
- **Fayum**, an oasis region southwest of Cairo.
- **Rome**, in Italy, across the Mediterranean Sea.

"Many famous examples were discovered in the Fayum region, which is why they are commonly called **Fayum portraits**. However, such portraits have been found elsewhere in Egypt too."

Fayum is a place name—not the name of a painter or painting technique.

Historical Background

- "Egypt had a long-established civilisation before it came under Roman rule. Political control changed, but older customs did not simply disappear."
- The portraits discussed mainly belong to the **first–third centuries CE**, during **Roman rule in Egypt**. They represent a society in which different cultural traditions interacted.

Cultural influence	What students should notice
Egyptian tradition	Preserving the body and preparing it for burial.
Greek/Hellenistic artistic influence	Naturalistic painting, shading and the appearance of depth.
Roman-period fashion	Hairstyles, clothing and ornaments reflecting contemporary styles.

Hellenistic: **"A term associated with Greek cultural traditions spreading and interacting with other societies after Alexander the Great."**

"A person today may follow a traditional family ceremony while wearing modern clothes and using contemporary photography. Different cultural influences can exist together."

Clothing and facial appearance alone cannot establish a person's ancestry. These portraits reflect the multicultural society of Roman Egypt.

Why the Faces Look So Real

- **Shading**, which makes the face appear three-dimensional.
- **Highlights in the eyes**, which suggest reflected light.
- **Individual hairstyles and facial features**, which distinguish one person from another.
- **Jewellery and clothing**, which communicate fashion and sometimes social standing.



Many portraits used **encaustic painting**—pigments mixed with wax. Others used **tempera**, in which pigments are mixed with a binding medium. Both techniques occur among surviving mummy portraits.

"The artist used colour, light and shadow to make a

flat wooden panel appear to contain a living face."

"Tondo of the Two Brothers"

- **Tondo** means a **circular painting or relief**.
- **"Two Brothers"** is the conventional title of the double portrait.
- Their identification as brothers is **suggested rather than certain**.

"What we can observe and what we infer are different."

Observation	Interpretation
Two young men appear in the painting.	They may have been brothers.
Their clothing and hairstyles can be examined.	These may help scholars estimate its date and cultural setting.

Why the Exhibition Matters

The exhibition brings together fragile objects that are normally held in different collections. Displaying portraits alongside mummies, jewellery and burial materials helps visitors understand their **original context**.

- **What can you directly see?**
  Clothing, hairstyle, jewellery, facial features and painting techniques.
- **What does the burial context tell you?**
  The portrait formed part of funerary practice.
- **What should you avoid assuming?**
  Exact ancestry, personality or family relationships without additional evidence.

"Fayum portraits combine individual remembrance, Egyptian burial traditions and the artistic world of Roman Egypt."

Duration at a Glance

Historical entity	Commonly used dates	Approximate duration
Ancient Egyptian dynastic civilisation	**c. 3100–30 BCE**	About **3,000 years**, including periods of division and foreign rule.
Egypt's New Kingdom—the major imperial phase	**c. 1550–1070 BCE**	About **480 years**.
Roman Empire up to the fall of its western half	**27 BCE–476 CE**	About **500 years**.
Eastern Roman or Byzantine Empire	Conventionally **330–1453 CE**	Continued Roman imperial rule in the east until **1453**.

Egyptian dates are approximate and vary between historical chronologies. **476 CE marks the conventional end of the Western Roman Empire, not the disappearance of the entire Roman Empire.**

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Ancient Egypt

Location and Geographical Importance

- Ancient Egypt developed along the **Nile River in northeastern Africa**.
- The Nile supported agriculture, transport and settlement in an otherwise largely desert environment.
- **Lower Egypt** was in the **north**, around the Nile Delta.
- **Upper Egypt** was in the **south**, upstream along the Nile.

Easy memory aid: "Upper" and "Lower" follow the river's course and elevation—not their position at the top or bottom of a map.

Beginning and Major Periods

The unification of Upper and Lower Egypt around **3100 BCE** is traditionally associated with **Narmer**. **Memphis** became an important early capital.

Period	Approximate dates	Main importance
Old Kingdom	**c. 2686–2181 BCE**	Associated with major pyramid construction, including the Giza pyramids.
Middle Kingdom	**c. 2055–1650 BCE**	Reunification, administrative development and cultural flourishing.
New Kingdom	**c. 1550–1070 BCE**	Egypt's major imperial expansion into Nubia and parts of the eastern Mediterranean region.
Ptolemaic Kingdom	**305–30 BCE**	A dynasty of Macedonian Greek origin ruled Egypt; **Cleopatra VII** was its last ruler.

These periods were separated by other phases, including political fragmentation. **Egypt was not one uninterrupted empire under a single dynasty.**

Basic Features

- **Rulers:** Kings conventionally known as **pharaohs**.
- **Important centres: Memphis**, **Thebes**, and later **Alexandria**.
- **Economy:** Agriculture, taxation, crafts and trade.
- **Writing: Hieroglyphs**, alongside other scripts used for different purposes.
- **Religion:** Worship of numerous deities and strong traditions concerning the afterlife.
- **Famous heritage:** Pyramids, temples, mummification and monumental sculpture.
- **Notable rulers: Hatshepsut, Akhenaten, Tutankhamun and Ramesses II**.

Important distinction: The famous Giza pyramids belong to the **Old Kingdom**; Egypt's greatest imperial expansion occurred much later, during the **New Kingdom**.

Roman Empire

Origin and Duration

- Rome began as a city in **Italy** and expanded into a Mediterranean power.
- The **Roman Republic** preceded the empire.
- **27 BCE**, when Octavian received the title **Augustus**, conventionally marks the beginning of the Roman Empire.
- **Julius Caesar was not its first emperor**; **Augustus** is conventionally recognised as the first.

Territorial Extent

- The empire controlled territories across **Europe, North Africa and western Asia**.
- Its greatest extent was reached under **Trajan**, around **117 CE**.
- Its territories included much of modern **Italy, Spain, France, Greece, Türkiye**, parts of **Britain**, and **Egypt**.
- The **Mediterranean Sea** connected its provinces through shipping and trade.

Basic Features

- **Government:** An emperor governed through provincial administration, officials and the army.
- **Major centres: Rome** and, later, **Constantinople**, now Istanbul.
- **Languages: Latin** predominated in much of the west; **Greek** remained important in the east.
- **Economy:** Agriculture, taxation, trade and extensive use of enslaved labour.
- **Major contributions:** Roads, aqueducts, urban infrastructure, architecture and Roman law.
- **Religion:** Initially diverse polytheistic traditions; Christianity later received imperial support and became dominant.

How Did It End?

- **395 CE** is conventionally associated with the lasting division into eastern and western imperial administrations.
- In **476 CE**, **Romulus Augustulus** was deposed, marking the conventional end of the western empire.
- The eastern empire continued until the **Ottoman conquest of Constantinople in 1453**.

How Egypt and Rome Were Connected

Date or period	Development
332 BCE	Alexander the Great conquered Egypt.
305 BCE	Ptolemy I assumed the title of king, establishing the Ptolemaic royal dynasty.
30 BCE	Following Cleopatra VII's defeat and death, Egypt came under Roman rule.
First–third centuries	The mummy portraits discussed in your article flourished in **Roman**

Date or period	Development
CE	Egypt.

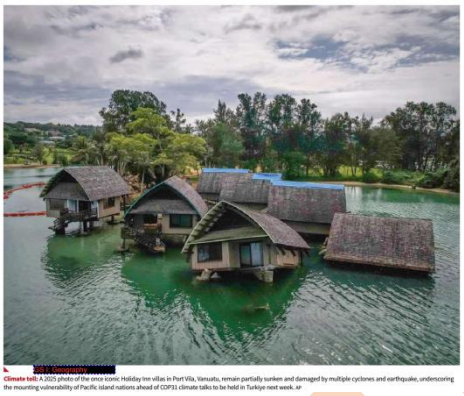
Classroom takeaway: "The Fayum portraits were made in Egypt, during Roman rule, using artistic traditions influenced by the Greek world." Egyptian culture continued even after Egypt lost its political independence.

Ancient Egypt: Nile Valley and Important Cities

Locate: The **Nile**, **Nile Delta**, **Memphis**, **Thebes**, **Sinai**, **Mediterranean Sea** and **Red Sea**. This is a geographical reference map, not a depiction of Egypt's boundaries at one particular date.

Roman Empire: Mediterranean Territories

GS Paper 1: Geography	04 November 2026
TOPICS COVERED	



Climate toll: A 2025 photo of the once-iconic Holiday Inn villas in Port Vila, Vanuatu, shows them partially sunken and damaged by multiple cyclones and an earthquake, underscoring the mounting vulnerability of Pacific island nations ahead of COP31 climate talks to be held in Türkiye next week.

जलवायु का असर: 2025 की इस तस्वीर में वानुआतु के पोर्ट विला स्थित कभी प्रतिष्ठित हॉलिडे इन के विला आंशिक रूप से धँसे हुए और कई चक्रवातों तथा एक भूकंप से क्षतिग्रस्त दिखाई दे रहे हैं। यह अगले सप्ताह तुर्किये में होने वाली COP31 जलवायु वार्ता से पहले प्रशांत द्वीपीय देशों की बढ़ती **जलवायु-संवेदनशीलता** को रेखांकित करता है।

VANUATU

- **Vanuatu is a small island country in the southwestern Pacific Ocean, particularly notable for its extraordinary linguistic diversity and active volcanic landscape.**

Geographical Information

Feature	Basic information
Official name	Republic of Vanuatu.
Region	Melanesia, a subregion of Oceania.

Feature	Basic information
Location	**East of Australia, northeast of New Caledonia, west of Fiji and south of the Solomon Islands**.
Capital	**Port Vila**, on **Efate Island**.
Island arrangement	A roughly **Y-shaped archipelago of about 83 islands**, approximately **65 inhabited**.
Land area	Approximately **12,200 square kilometres**.
Largest island	**Espiritu Santo**.
Highest mountain	**Mount Tabwemasana**, approximately **1,879 metres**, on Espiritu Santo.
Other important islands	**Malekula, Tanna, Pentecost, Ambrym and Ambae**.
Climate	Predominantly **tropical maritime**, becoming more subtropical towards the south.

- Most islands are mountainous and volcanic, with relatively narrow coastal plains. The commonly quoted **83-island count includes Matthew and Hunter islands**, whose sovereignty is disputed with France.
- Locate Australia first, move northeast towards **New Caledonia**, then farther northeast to **Vanuatu**. **Fiji lies to its east.**

Demographic Information

Indicator	Information
Population: 2020 census	**300,019**, or approximately **3 lakh**.
Population: 2025 estimate	**335,169**, or approximately **3.35 lakh**, in the World Bank series.
People	Known as **Ni-Vanuatu**; the population is predominantly Indigenous Melanesian.
Settlement pattern	Most people live in **rural communities**.
Principal urban centres	**Port Vila** and **Luganville**, the latter on Espiritu Santo.
Official languages	**Bislama, English and French**.
Religion	Christianity predominates, alongside continuing customary beliefs and practices.

What Makes Vanuatu Distinctive?

Exceptional Number of Languages Relative to Population

- Vanuatu has **more than 100 Indigenous languages**, despite its small population.
- **UNCTAD describes it as having the world's highest density of languages per capita**.

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- Exact language counts differ according to classification, including how languages and dialects are distinguished.
- **Bislama**, an English-based creole, serves as an important shared language between communities.
- A country with only about **3.35 lakh people** contains numerous separate language communities.
- \ Vanuatu's distinction concerns **languages relative to population**. It does **not** have the world's largest absolute number of languages.

An Active Volcanic Island Arc

- Vanuatu lies along the **Pacific Ring of Fire**.
- Its earthquakes and volcanoes are associated with **subduction**, where the Australian plate descends beneath the overriding plate system along the Vanuatu arc.
- **Mount Yasur on Tanna Island** is internationally famous for its persistent volcanic activity.
- The Smithsonian records activity at Yasur since at least **1774**.

Exposure to Several Natural Hazards

Vanuatu faces a combination of:

- **Tropical cyclones**.
- **Earthquakes and tsunamis**.
- **Volcanic eruptions**.
- **Coastal flooding and climate-related pressures**.

Unusual Colonial History

- Formerly called the **New Hebrides**, it was jointly administered by **Britain and France** under an **Anglo-French Condominium**, established in **1906**.
- **Condominium** here means joint administration by two powers.
- Vanuatu became independent on **30 July 1980**.
- This history helps explain why both **English and French** remain official languages.

Distinctive Cultural Traditions

- **Vanuatu sand drawings**, recognised by UNESCO, communicate stories, knowledge and cultural meanings through intricate designs.
- **Land diving**, or **Naghol**, on Pentecost Island involves traditional jumps from wooden towers with vines attached to the ankles.

GS Paper II: Polity	04 November 2026
TOPICS COVERED	
04N11	Voter list anomalies in U.P.: police to add Section 198 to FIR उत्तर प्रदेश में मतदाता सूची की अनियमितताएँ: पुलिस FIR में धारा 198 जोड़ेगी
04N11	NHRC seeks report from three States on trafficking मानवाधिकार आयोग ने तीन राज्यों से मानव तस्करी पर रिपोर्ट माँगी

04N11	How the Supreme Court shaped due process in death penalty cases मृत्युदंड के मामलों में सर्वोच्च न्यायालय ने उचित प्रक्रिया को कैसे आकार दिया
04N11	Poland plunges into crisis over fight for control of constitutional tribunal संवैधानिक न्यायाधिकरण पर नियंत्रण की लड़ाई से पोलैंड संकट में

Voter list anomalies in U.P.: police to add Section 198 to FIR

Press Trust of India

GS II: Polity

The Uttar Pradesh police has initiated the process to add Section 198 of the BNS, which deals with public servants disobeying the law, to an FIR against two electoral registration officers and a computer operator over alleged irregularities in the voter list of the Pilibhit Sadar Assembly constituency, an officer said on Tuesday.

Pilibhit SP Sukirti Madhav said necessary instructions were issued to the investigating officer late on Monday night, and the process of adding the section was underway.

Section 198 of the BNS deals with public servants knowingly disobeying a direction of the law with the intent or knowledge to cause injury to any person.

On Sunday, the Election Commission suspended the two EROs, Mayank Goswami and Hemant Chaudhary, who were posted in Pilibhit as Sub-Divisional Magistrates. They were earlier transferred by the State government and put on the waitlist.

The irregularities came to light during an inquiry into the disposal of offline forms received as part of the special summary revision (SSR) of electoral rolls.

'No documents'

According to the inquiry report, 13,779 offline forms were received between May 31 and August 28. Of these, 10,470 were approved while 3,309 were rejected. However, no application forms or supporting documents related to the entries were found in the office.

04N11. Voter list anomalies in U.P.: police to add Section 198 to FIR

उत्तर प्रदेश में मतदाता सूची की अनियमितताएँ: पुलिस FIR में धारा 198 जोड़ेगी

- The Uttar Pradesh police has initiated the process to add Section 198 of the BNS, which deals with public servants disobeying the law, to an FIR against two electoral registration officers and a computer operator over alleged irregularities in the voter list of the Pilibhit Sadar Assembly constituency, an officer said on Tuesday.

एक अधिकारी ने मंगलवार को बताया कि उत्तर प्रदेश पुलिस ने पीलीभीत सदर विधानसभा क्षेत्र की मतदाता सूची में कथित अनियमितताओं के मामले में दो निर्वाचक रजिस्ट्रीकरण अधिकारियों और एक कंप्यूटर ऑपरेटर के खिलाफ़ दर्ज FIR में BNS की धारा 198 जोड़ने की प्रक्रिया शुरू की है। यह धारा कानून की अवज्ञा करने वाले लोक सेवकों से संबंधित है।

- Pilibhit SP Sukirti Madhav said necessary instructions were issued to the investigating officer late on Monday night, and the process of adding the section was underway.

पीलीभीत की पुलिस अधीक्षक सुकृति माधव ने कहा कि सोमवार देर रात जाँच अधिकारी को ज़रूरी निर्देश जारी किए गए और धारा जोड़ने की प्रक्रिया चल रही थी।

- Section 198 of the BNS deals with public servants knowingly disobeying a direction of the law with the intent or knowledge to cause injury to any person.

BNS की धारा 198 ऐसे लोक सेवकों से संबंधित है जो किसी व्यक्ति को क्षति पहुँचाने के इरादे या जानकारी के साथ जानबूझकर कानून के निर्देश की अवज्ञा करते हैं।

- On Sunday, the Election Commission suspended the two EROs, Mayank Goswami and Hemant Chaudhary, who were posted in Pilibhit as Sub-Divisional Magistrates.

रविवार को निर्वाचन आयोग ने दोनों निर्वाचक रजिस्ट्रीकरण अधिकारियों—मयंक गोस्वामी और हेमंत चौधरी—को निलंबित कर दिया। वे पीलीभीत में उप-मंडल मजिस्ट्रेट के पद पर तैनात थे।

- They were earlier transferred by the State government and put on the waitlist.

इससे पहले राज्य सरकार ने उनका तबादला करके उन्हें प्रतीक्षा सूची में डाल दिया था।

- The irregularities came to light during an inquiry into the disposal of offline forms received as part of the **special summary revision (SSR)** of electoral rolls.

मतदाता सूचियों के **विशेष सारांश पुनरीक्षण (SSR)** के तहत प्राप्त ऑफलाइन फ़ॉर्मों के निपटारे की जाँच के दौरान अनियमितताएँ सामने आईं।

'No documents'

'कोई दस्तावेज़ नहीं'

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- According to the inquiry report, 13,779 offline forms were received between May 31 and August 28.
  जाँच रिपोर्ट के अनुसार, 31 मई से 28 अगस्त के बीच 13,779 ऑफलाइन फ़ॉर्म प्राप्त हुए।
- Of these, 10,470 were approved while 3,309 were rejected.
  इनमें से 10,470 फ़ॉर्म मंज़ूर किए गए, जबकि 3,309 अस्वीकार कर दिए गए।
- However, no application forms or supporting documents related to the entries were found in the office.
  हालाँकि, कार्यालय में इन प्रविष्टियों से संबंधित कोई आवेदन फ़ॉर्म या सहायक दस्तावेज़ नहीं मिले।

NHRC seeks report from three States on trafficking

GS II: Polity

The Hindu Bureau
NEW DELHI

The National Human Rights Commission (NHRC) on Tuesday took *suo motu* cognisance of media reports alleging the trafficking and sale of minor girls from the border districts of Madhya Pradesh and Rajasthan to various cities in Maharashtra and issued notice to top officials in the three States to submit detailed reports within two weeks.

Parents, allegedly driven by poverty, sold their daughters to middlemen for amounts ranging from ₹3 lakh to ₹5 lakh, according to the media reports cited by NHRC.

The middlemen reportedly use forged documents to pass the girls off as their adopted children before trafficking them to Maharashtra for sex work.

04N11. NHRC seeks report from three States on trafficking
मानवाधिकार आयोग ने तीन राज्यों से मानव तस्करी पर रिपोर्ट माँगी

- The **National Human Rights Commission** **(NHRC)** on Tuesday took suo motu cognisance of media reports alleging the trafficking and sale of minor girls from the border districts of Madhya Pradesh and Rajasthan to various cities in Maharashtra and issued notice to top officials in the three States to submit detailed reports within two weeks.

राष्ट्रीय मानवाधिकार आयोग (NHRC) ने मंगलवार को मीडिया की उन खबरों पर स्वतः संज्ञान लिया जिनमें मध्य प्रदेश और राजस्थान के सीमावर्ती ज़िलों से नाबालिग लड़कियों की तस्करी कर उन्हें महाराष्ट्र के विभिन्न शहरों में बेचे जाने का आरोप लगाया गया है। आयोग ने तीनों राज्यों के वरिष्ठ अधिकारियों को नोटिस जारी कर दो सप्ताह के भीतर विस्तृत रिपोर्ट देने को कहा।

- Parents, allegedly driven by poverty, sold their daughters to middlemen for amounts ranging from ₹3 lakh to ₹5 lakh, according to the media reports cited by NHRC.

NHRC द्वारा उद्धृत मीडिया रिपोर्टों के अनुसार, कथित तौर पर ग़रीबी से मजबूर होकर माता-पिता ने अपनी बेटियों को ₹3 लाख से ₹5 लाख तक की रकम में बिचौलियों को बेच दिया।

- The middlemen reportedly use forged documents to pass the girls off as their adopted children before trafficking them to Maharashtra for sex work.

खबरों के अनुसार, बिचौलिए लड़कियों की तस्करी कर उन्हें यौन कार्य में धकेलने के लिए महाराष्ट्र ले जाने से पहले जाली दस्तावेज़ों के ज़रिए उन्हें अपनी गोद ली हुई संतान बताते हैं।

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How the Supreme Court shaped due process in death penalty cases

In *Bachan Singh*, the apex court upheld the death penalty but laid down guidelines for judicial discretion; in *Manoj v. State of Madhya Pradesh*, it prescribed 'practical guidelines', including the submission of mental health evaluations and custody conduct reports of the accused

GS II: Polity

L. Nageswara Rao

The Day Against the Death Penalty, observed on October 10, offered a fitting moment to look back on how the Supreme Court's 1980 safeguards, laid down when it upheld capital punishment, have fared over the past four decades.

In *Bachan Singh v. State of Punjab* (1980), the Constitution Bench upheld the death penalty, but imposed specific conditions in the shape of guidelines for the exercise of judicial discretion. Following the legislative scheme of Section 354(3) of the CrPC, now Section 393(3) of the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023, life imprisonment was to be the norm, and death sentence could be imposed only for "special reasons". Courts were to weigh the circumstances of the crime alongside those of the accused, and impose death only where life imprisonment was "unquestionably foreclosed".

The exceptionality principle

This idea of exceptionality of the death sentence in *Bachan Singh* is not quantitative regarding an offence's rarity but rests on "a real and abiding concern for the dignity of human life". The methodology adopted by the Court to ensure that the promise of human dignity is fulfilled is individualised sentencing. It is the idea that the death penalty, while being proportionate, must be imposed after properly considering the individual circumstances of the accused. This allows courts to assess how social, structural and psychological factors shape moral blameworthiness, and whether reformation is truly foreclosed. And it is for the state to prove, by evidence, that the probability of reformation does not exist.

Regrettably, this dignity-oriented jurisprudence was soon made precarious. *Machhi Singh v. State of Punjab* (1983), as the Court later acknowledged in *Sangeet v. State of Haryana* (2013), shifted the inquiry towards the crime, in effect asking whether there were reasons to impose life imprisonment rather than special reasons to impose death. In December 1995, a two-judge Bench went further. *Ravji v. State of Rajasthan* held that the nature and gravity of the offence, not the circumstances of the criminal, was what mattered in deciding punishment. Ravji was hanged in May 1996; Surja Ram, in April 1997. Two men were sent to the gallows on a principle the Supreme Court would later declare contrary to binding law.

A decade later, in *Santosh Kumar Bariyar v. State of Maharashtra* (2009), the Court held that *Ravji* had been decided in ignorance of *Bachan Singh*, and noted that it had been followed in at least six other cases in which the death sentence was awarded. *Bariyar* also clarified that life imprisonment is "unquestionably foreclosed" only when the sentencing aim of reformation is unachievable. In 2012, 14 retired judges called the two executions "the gravest known miscarriage of justice" in independent India.

A focus on reformation

Since then, including in the 262nd Law Commission Report in 2015, reformation has been championed as an important goal in death penalty cases. Yet sentencing, particularly in trial courts, looked much the same. A nationwide study of 306 death sentences imposed between 2018 and 2020 found that 36.1% were pronounced on the same day as conviction, and another 18.4% on the following day. In most cases, the defence neither argued nor presented evidence on mitigation.

It is against this record of crime-centric practice that the Supreme Court has, in recent years, turned to the fairness of the sentencing procedure itself. In *Manoj v. State of Madhya Pradesh* (2022), it prescribed 'practical guidelines' to operationalise the collection of information on the accused, requiring the state to produce mental health evaluations, reports on conduct in custody, and a probation officer's report. In a *suo motu* Writ Petition, since referred to a Constitution Bench, the court insisted that the defence must have a real and meaningful opportunity to present material on sentence. And in *Vasanta Sampat Dupare v. Union of India* (2025), it held that a sentencing hearing which is compliant to *Manoj* flows from Articles 14 and 21. A death sentence imposed without one is unconstitutional and can be reopened even after it has attained finality.

More recently, in *Waris v. State of Madhya Pradesh* (September 2026), the Court upheld a conviction for the rape and murder of a child but commuted the death sentence, because the State had led no evidence to exclude the possibility of reformation. The gravity of the crime, however extreme, could not by itself establish that life imprisonment was unquestionably foreclosed.

The promise, however, remains unfulfilled where it matters most. In 2025, trial courts sentenced 128 people to death. In 95.18% of the cases where compliance could be assessed, the procedure prescribed in *Manoj* was not followed.

A troubling record

However, the greater worry lies not with the question of sentence but elsewhere. Over the past decade, nearly a third of the death sentences decided by the High Courts and the Supreme Court have ended in acquittals. In 2025 alone, the Supreme Court acquitted the accused in 10 of the 19 death penalty cases it decided, repeatedly noting seriously flawed investigations and prosecutions. In *Dupare*, it acknowledged that investigations often rest on "confessions extracted in opacity" and forensic material "of doubtful rigour". A system so prone to error cannot safely decide an irreversible punishment on the crime alone. *Bachan Singh* left us a warning: "Judges should never be bloodthirsty."

The anguish that brutal crimes provoke is real, and no one is insulated from it. But *Ravji* stands as a stark reminder of what follows when that anguish overwhelms legal reasoning. The safeguards developed from *Bachan Singh* to *Dupare* are not obstacles to justice; they are the conditions on which the constitutionality of the death penalty rests. Fidelity to that process is not mercy. It is what the Constitution mandates.

(The author is a former judge of the Supreme Court of India. Views expressed are personal.)

04N11. How the Supreme Court shaped due process in death penalty cases
मृत्युदंड के मामलों में सर्वोच्च न्यायालय ने उचित प्रक्रिया को कैसे आकार दिया

- The Day Against the Death Penalty, observed on October 10, offered a fitting moment to look back on how the Supreme Court's 1980 safeguards, laid down when it upheld capital punishment, have fared over the past four decades.
  10 अक्टूबर को मनाए गए मृत्युदंड-विरोधी दिवस पर यह देखना उचित था कि मृत्युदंड को बरकरार रखते हुए सर्वोच्च न्यायालय ने 1980 में जो सुरक्षा उपाय तय किए थे, वे पिछले चार दशकों में किस तरह लागू हुए हैं।
- In **Bachan Singh v. State of Punjab (1980)**, the Constitution Bench upheld the death penalty, but imposed specific conditions in the shape of guidelines for the exercise of judicial discretion.
  बचन सिंह बनाम पंजाब राज्य (1980) मामले में संविधान पीठ ने मृत्युदंड को बरकरार रखा, लेकिन न्यायिक विवेक का इस्तेमाल करने के लिए दिशानिर्देशों के रूप में विशिष्ट शर्तें तय कीं।
- Following the legislative scheme of Section 354(3) of the CrPC, now Section 393(3) of the Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023, life imprisonment was to be the norm, and death sentence could be imposed only for "special reasons".
  दंड प्रक्रिया संहिता (CrPC) की धारा 354(3)—जो अब भारतीय नागरिक सुरक्षा संहिता (BNSS), 2023 की धारा 393(3) है—की विधायी व्यवस्था के अनुसार, आजीवन कारावास सामान्य दंड होना था और मृत्युदंड केवल "विशेष कारणों" से दिया जा सकता था।

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- Courts were to weigh the circumstances of the crime alongside those of the accused, and impose death only where life imprisonment was "unquestionably foreclosed".
  अदालतों को अपराध की परिस्थितियों के साथ-साथ अभियुक्त की परिस्थितियों पर भी विचार करना था और मृत्युदंड केवल तभी देना था, जब आजीवन कारावास का विकल्प "निस्संदेह बंद हो चुका हो"।

The exceptionality principle
अपवादस्वरूप मृत्युदंड का सिद्धांत

- This idea of exceptionality of the death sentence in *Bachan Singh* is not quantitative regarding an offence's rarity but rests on "a real and abiding concern for the dignity of human life".
  बचन सिंह मामले में मृत्युदंड को अपवादस्वरूप देने का विचार इस बात पर आधारित नहीं है कि कोई अपराध कितना दुर्लभ है, बल्कि यह "मानव जीवन की गरिमा के प्रति वास्तविक और स्थायी चिंता" पर आधारित है।
- The methodology adopted by the Court to ensure that the promise of human dignity is fulfilled is **individualised sentencing**.
  मानव गरिमा की प्रतिबद्धता पूरी हो, यह सुनिश्चित करने के लिए न्यायालय ने **व्यक्ति-विशिष्ट दंड निर्धारण** का तरीका अपनाया।
- It is the idea that the death penalty, while being proportionate, must be imposed after properly considering the individual circumstances of the accused.
  इसका आशय है कि मृत्युदंड अनुपातिक होने के साथ-साथ अभियुक्त की व्यक्तिगत परिस्थितियों पर समुचित विचार करने के बाद ही दिया जाना चाहिए।
- This allows courts to assess how social, structural and psychological factors shape moral blameworthiness, and whether reformation is truly foreclosed.
  इससे अदालतें यह परख सकती हैं कि सामाजिक, संरचनात्मक और मनोवैज्ञानिक कारक नैतिक दोषिता को किस तरह आकार देते हैं और क्या सुधार की संभावना सचमुच समाप्त हो चुकी है।
- And it is for the State to prove, by evidence, that the probability of reformation does not exist.
  और यह साबित करना राज्य की ज़िम्मेदारी है कि साक्ष्यों के आधार पर सुधार की कोई संभावना नहीं है।
- Regrettably, this dignity-oriented jurisprudence was soon made precarious.
  दुर्भाग्य से, गरिमा पर आधारित इस न्यायशास्त्र की स्थिति जल्द ही अस्थिर हो गई।
- *Machhi Singh v. State of Punjab* (1983), as the Court later acknowledged in *Sangeet v. State of Haryana* (2013), shifted the inquiry towards the crime, in effect asking whether there were reasons to impose life imprisonment rather than special reasons to impose death.
  जैसा कि न्यायालय ने बाद में *संगीत बनाम हरियाणा राज्य* (2013) में स्वीकार किया, *मच्छी सिंह बनाम पंजाब राज्य* (1983) ने विचार का केंद्र अपराध को बना दिया। इससे प्रभावी रूप से यह पूछा जाने लगा कि मृत्युदंड देने के विशेष कारण हैं या नहीं, जबकि सवाल यह होना चाहिए था कि आजीवन कारावास देने के कारण हैं या नहीं।
- In December 1995, a two-judge Bench went further.
  दिसंबर 1995 में दो न्यायाधीशों की पीठ ने इससे भी आगे कदम उठाया।
- *Ravji v. State of Rajasthan* held that the nature and gravity of the offence, not the circumstances of the criminal, was what mattered in deciding punishment.
  रवजी बनाम राजस्थान राज्य मामले में कहा गया कि सज़ा तय करते समय अपराध की प्रकृति और गंभीरता महत्त्वपूर्ण है, अपराधी की परिस्थितियाँ नहीं।
- Ravji was hanged in May 1996; Surja Ram, in April 1997.
  रवजी को मई 1996 में और सूरजा राम को अप्रैल 1997 में फाँसी दी गई।
- Two men were sent to the gallows on a principle the Supreme Court would later declare contrary to binding law.
  दो लोगों को ऐसे सिद्धांत के आधार पर फाँसी दी गई, जिसे सर्वोच्च न्यायालय ने बाद में बाध्यकारी कानून के विपरीत घोषित किया।
- A decade later, in *Santosh Kumar Bariyar v. State of Maharashtra* (2009), the Court held that *Ravji* had been decided in ignorance of *Bachan Singh*, and noted that it had been followed in

at least six other cases in which the death sentence was awarded.
एक दशक बाद, *संतोष कुमार बारियार बनाम महाराष्ट्र राज्य* (2009) मामले में न्यायालय ने कहा कि *रवजी* का फैसला *बचन सिंह* की अनदेखी करके दिया गया था। न्यायालय ने यह भी बताया कि कम-से-कम छह अन्य मामलों में उसका अनुसरण करते हुए मृत्युदंड दिया गया था।

- *Bariyar* also clarified that life imprisonment is "unquestionably foreclosed" only when the sentencing aim of reformation is unachievable.
बारियार मामले ने यह भी स्पष्ट किया कि आजीवन कारावास का विकल्प केवल तभी "निस्संदेह बंद" माना जा सकता है, जब दंड देने का सुधारात्मक उद्देश्य हासिल करना असंभव हो।
- In 2012, 14 retired judges called the two executions "the gravest known miscarriage of justice" in independent India.
2012 में 14 सेवानिवृत्त न्यायाधीशों ने इन दोनों फाँसियों को स्वतंत्र भारत में "न्याय की सबसे गंभीर ज्ञात विफलता" कहा।

A focus on reformation
सुधार पर ध्यान

- Since then, including in the 262nd Law Commission Report in 2015, reformation has been championed as an important goal in death penalty cases.
तब से, 2015 की विधि आयोग की 262वीं रिपोर्ट सहित, मृत्युदंड के मामलों में सुधार को एक महत्त्वपूर्ण लक्ष्य के रूप में आगे रखा गया है।
- Yet sentencing, particularly in trial courts, looked much the same.
फिर भी, ख़ासकर निचली अदालतों में, सज़ा तय करने की प्रक्रिया में कोई ख़ास बदलाव नहीं दिखा।
- A nationwide study of 306 death sentences imposed between 2018 and 2020 found that 36.1% were pronounced on the same day as conviction, and another 18.4% on the following day.
2018 से 2020 के बीच दिए गए 306 मृत्युदंडों के एक राष्ट्रव्यापी अध्ययन में पाया गया कि 36.1% सजाएँ दोषसिद्धि वाले दिन ही सुनाई गईं और अन्य 18.4% अगले दिन सुनाई गईं।
- In most cases, the defence neither argued nor presented evidence on mitigation.
अधिकांश मामलों में, बचाव पक्ष ने न तो दंड कम करने के पक्ष में दलीलें दीं, न ही साक्ष्य प्रस्तुत किए।
- It is against this record of crime-centric practice that the Supreme Court has, in recent years, turned to the fairness of the sentencing procedure itself.
अपराध-केंद्रित रवैये के इसी रिकॉर्ड को देखते हुए सर्वोच्च न्यायालय ने हाल के वर्षों में स्वयं सज़ा तय करने की प्रक्रिया की निष्पक्षता पर ध्यान दिया है।
- In *Manoj v. State of Madhya Pradesh* (2022), it prescribed "practical guidelines" to operationalise the collection of information on the accused, requiring the State to produce mental health evaluations, reports on conduct in custody, and a probation officer's report.
मनोज बनाम मध्य प्रदेश राज्य (2022) मामले में न्यायालय ने अभियुक्त के बारे में जानकारी जुटाने के लिए "व्यावहारिक दिशानिर्देश" तय किए। इसके तहत राज्य को मानसिक स्वास्थ्य मूल्यांकन, हिरासत के दौरान आचरण की रिपोर्ट और परिवीक्षा अधिकारी की रिपोर्ट पेश करनी होगी।
- In a suo motu Writ Petition, since referred to a Constitution Bench, the court insisted that the defence must have a real and meaningful opportunity to present material on sentence.
स्वतः संज्ञान लेकर शुरू की गई एक रिट याचिका में, जिसे अब संविधान पीठ के पास भेजा गया है, न्यायालय ने ज़ोर दिया कि बचाव पक्ष को सज़ा के संबंध में सामग्री पेश करने का वास्तविक और सार्थक अवसर मिलना चाहिए।
- And in *Vasanta Sampat Dupare v. Union of India* (2025), it held that a sentencing hearing which is compliant with *Manoj* flows from Articles 14 and 21.
और *वसंता संपत दुपारे बनाम भारत संघ* (2025) मामले में न्यायालय ने कहा कि *मनोज* के अनुरूप सज़ा पर सुनवाई का अधिकार अनुच्छेद 14 और 21 से प्राप्त होता है।

- A death sentence imposed without one is unconstitutional and can be reopened even after it has attained finality.
  ऐसी सुनवाई के बिना दिया गया मृत्युदंड असंवैधानिक है और अंतिम रूप ले लेने के बाद भी उस पर फिर से विचार किया जा सकता है।
- More recently, in *Waris v. State of Madhya Pradesh* (September 2026), the Court upheld a conviction for the rape and murder of a child but commuted the death sentence, because the State had led no evidence to exclude the possibility of reformation.
  हाल ही में, *वारिस बनाम मध्य प्रदेश राज्य* (सितंबर 2026) मामले में न्यायालय ने एक बच्चे के बलात्कार और हत्या की दोषसिद्धि बरकरार रखी, लेकिन मृत्युदंड को कम कर दिया, क्योंकि राज्य ने सुधार की संभावना को ख़ारिज करने वाला कोई साक्ष्य पेश नहीं किया था।
- The gravity of the crime, however extreme, could not by itself establish that life imprisonment was unquestionably foreclosed.
  अपराध कितना भी गंभीर क्यों न हो, केवल उसकी गंभीरता से यह साबित नहीं हो सकता कि आजीवन कारावास का विकल्प निस्संदेह बंद हो चुका है।
- The promise, however, remains unfulfilled where it matters most.
  हालाँकि, जहाँ इसकी सबसे अधिक ज़रूरत है, वहाँ यह प्रतिबद्धता अब भी पूरी नहीं हुई है।
- In 2025, trial courts sentenced 128 people to death.
  2025 में निचली अदालतों ने 128 लोगों को मृत्युदंड सुनाया।
- In 95.18% of the cases where compliance could be assessed, the procedure prescribed in *Manoj* was not followed.
  जिन मामलों में अनुपालन का आकलन किया जा सकता था, उनमें से 95.18% में *मनोज* मामले में निर्धारित प्रक्रिया का पालन नहीं किया गया।

A troubling record
चिंताजनक रिकॉर्ड

- However, the greater worry lies not with the question of sentence but elsewhere.
  हालाँकि, इससे भी बड़ी चिंता सज़ा के सवाल में नहीं, बल्कि कहीं और है।
- Over the past decade, nearly a third of the death sentences decided by the High Courts and the Supreme Court have ended in acquittals.
  पिछले दशक में उच्च न्यायालयों और सर्वोच्च न्यायालय द्वारा विचार किए गए मृत्युदंड के लगभग एक-तिहाई मामलों में अभियुक्त बरी हुए हैं।
- In 2025 alone, the Supreme Court acquitted the accused in 10 of the 19 death penalty cases it decided, repeatedly noting seriously flawed investigations and prosecutions.
  केवल 2025 में, सर्वोच्च न्यायालय ने जिन 19 मृत्युदंड मामलों पर फैसला सुनाया, उनमें से 10 में अभियुक्तों को बरी कर दिया। न्यायालय ने बार-बार जाँच और अभियोजन में गंभीर खामियों का उल्लेख किया।
- In *Dupare*, it acknowledged that investigations often rest on "confessions extracted in opacity" and forensic material "of doubtful rigour".
  दुपारे मामले में न्यायालय ने माना कि जाँच अक्सर "अस्पष्ट परिस्थितियों में लिए गए इक़बालिया बयानों" और "संदिग्ध गुणवत्ता" वाले फॉरेंसिक साक्ष्यों पर निर्भर करती है।
- A system so prone to error cannot safely decide an irreversible punishment on the crime alone.
  इतनी त्रुटिप्रवण व्यवस्था केवल अपराध के आधार पर अपरिवर्तनीय सज़ा का सुरक्षित रूप से फैसला नहीं कर सकती।
- *Bachan Singh* left us a warning: "Judges should never be bloodthirsty."
  बचन सिंह मामले ने हमें चेतावनी दी थी: "न्यायाधीशों को कभी रक्तपिपासु नहीं होना चाहिए।"
- The anguish that brutal crimes provoke is real, and no one is insulated from it.
  जघन्य अपराधों से पैदा होने वाली पीड़ा वास्तविक है और कोई भी उससे अछूता नहीं है।

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- But *Ravji* stands as a stark reminder of what follows when that anguish overwhelms legal reasoning.
  लेकिन *रवजी* मामला इस बात की स्पष्ट याद दिलाता है कि जब वह पीड़ा कानूनी तर्क पर हावी हो जाती है, तो उसके क्या परिणाम होते हैं।
- The safeguards developed from *Bachan Singh* to *Dupare* are not obstacles to justice; they are the conditions on which the constitutionality of the death penalty rests.
  बचन सिंह से *दुपारे* तक विकसित सुरक्षा उपाय न्याय में बाधा नहीं हैं; इन्हीं शर्तों पर मृत्युदंड की संवैधानिकता टिकी है।

"Even after a person is found guilty of a terrible crime, what must a court examine before imposing the death penalty?"

Proving guilt and justifying a death sentence are two different judicial tasks.

Stage	Question before the court
Conviction	Has the prosecution proved that this person committed the offence beyond reasonable doubt?
Sentencing	What punishment is legally appropriate for this particular offender?

"A person can remain guilty even when a higher court changes the punishment from death to imprisonment."

Term	Simple meaning
Acquittal	The person is not held guilty of the charge.
Commutation	The punishment is changed to a less severe punishment; the conviction can remain intact.
Fresh sentencing hearing	The court reconsiders punishment after following the required procedure.

Why Death Requires Exceptional Safeguards

- "If a wrongly convicted person is imprisoned, a later judgment may secure their release, although the lost years cannot truly be restored. If that person has been executed, release is impossible."
- **The death penalty is irreversible. Therefore, both the finding of guilt and the procedure for choosing death require particularly careful scrutiny.**
- This is where **due process**, or **fair procedure**, becomes central:
- **"The State must follow a fair, meaningful and legally justified process before taking away a person's life."**

Starting Rule: Life Is the Norm

- In **Bachan Singh v. State of Punjab (1980)**, the Supreme Court upheld the death penalty while restricting it to the **"rarest of rare"** cases, where the alternative of life imprisonment is **unquestionably foreclosed**.

- The statutory requirement of **"special reasons"** for a death sentence appears in **Section 393(3), BNSS**, corresponding to **Section 354(3), CrPC**.

Two contrasting questions:

- **Correct starting point:** "Why is life imprisonment inadequate in this particular case?"
- **Incorrect starting point:** "The crime was terrible; why should we spare the offender?"

"Rarest of rare" is not a counting exercise. It does not simply mean an unusual crime or an offence receiving intense publicity.

"Crime and Criminal" with Two Columns

Circumstances of the crime	Circumstances of the offender
What happened?	What is the offender's background?
Was it planned?	What were their age and psychological condition?
What harm was caused?	Were there relevant experiences of deprivation or abuse?
What was the person's role?	What evidence exists about their conduct and capacity for reform?

- Call the first group **aggravating circumstances** when they support greater severity, and the second **mitigating circumstances** when they support a lesser punishment.
- Mitigation does not excuse the offence. It helps the court determine the appropriate punishment.

"Evidence that an offender experienced severe childhood abuse does not make murder lawful. However, it may be relevant when deciding whether death is justified."

Judgments as an Evolving Story

Judgment	Classroom explanation
Bachan Singh, 1980	Established the restrictive framework: examine the crime and the offender; death must remain exceptional.
Machhi Singh, 1983	Elaborated categories for applying the doctrine; later judgments questioned the resulting emphasis on the crime.
Ravji, decided in 1995	Took an approach prioritising the crime's nature and gravity over the offender's circumstances.
Santosh Kumar Bariyar, 2009	Rejected Ravji's approach as inconsistent with the binding principles of Bachan Singh.
Manoj, 2022	Required meaningful collection and consideration of information relevant to mitigation.
Vasanta Sampat Dupare, 2025	Recognised exceptional reopening of sentencing where serious procedural safeguards were denied.

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Manoj Through a "Complete Information File"

- Imagine a judge receiving only photographs of the crime scene.
- "Those photographs may show the horror of the offence. But can they establish the offender's mental health, prison conduct or possibility of reform?"
- The answer is **no**.

Manoj requires relevant material such as:

- **Psychological and psychiatric assessments.**
- **Prison-conduct reports.**
- **Probation-officer and background reports.**
- **A meaningful opportunity for the defence to present mitigation.**

A hearing should be a genuine opportunity to produce evidence, rather than a formality.

Reformation and the Recent Cases

- **Reformation** means the possibility that an offender can change and be rehabilitated.
- "An extremely serious crime establishes its gravity. It does not, by itself, provide a psychological assessment proving that the offender can never reform."
- In **Waris v. State of Madhya Pradesh, decided on 24 September 2026**, the Court upheld the conviction but reduced the death sentence; the article highlights the absence of adequate evidence excluding reformation.
- In **Dupare**, the Court left the conviction untouched and ordered reconsideration of sentencing.
- It cautioned that **Article 32 cannot become a routine route for reopening concluded cases**; serious, specific breaches of safeguards are required.

Issue to the Constitution

- **Article 14:** Protects equality and guards against arbitrary State action.
- **Article 21:** Protects life and personal liberty through legally valid, fair procedure.
- **Article 32:** Provides a remedy before the Supreme Court for violations of fundamental rights.

"A convicted person loses certain freedoms through lawful punishment, but does not lose every constitutional protection."

- **Acquittals raise concerns about the reliability of conviction.**
- **Mitigation failures raise concerns about the fairness of sentencing.**
- **Both matter when the punishment cannot be reversed.**

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Poland plunges into crisis over fight for control of constitutional tribunal

Ruling bloc led by PM Tusk and Opposition-backed President Nawrocki are at loggerheads over appointments made to the tribunal by each side; judges to tribunal are appointed by lower house of parliament; many, including those in ruling camp, call for 'constitutional reset' with amendments

GS II: Polity

NEWS ANALYSIS

Franciszek Snarski

Shortly after 6 p.m. on Friday (October 30), Poland's Constitutional Tribunal announced that the Tribunal's president Bogdan Święczkowski and vice-president Bartłomiej Sochański had been suspended for a month. The order was signed by judge Anna Korwin-Piotrowska, one of five Sejm(lower house of the Parliament)-elected judges whose oaths President Karol Nawrocki has refused to accept. Police cordoned off the Tribunal building as a mass of protesters tried to force their way through, and Mr. Nawrocki turned his Senegal-bound plane back to Warsaw. Just before 1 a.m., he walked into the Tribunal and addressed the present members of the judicial body, "You are not Constitutional Tribunal judges". A decade-long legal dispute had moved into the building itself.

The Tribunal has 15 judges, each elected by the Sejm for nine years. It can strike down laws and review bills the President sends for referral to it before his decision to sign or veto.

In October 2020, it ruled abortion for foetal defects unconstitutional; such cases accounted for 1,074 of the 1,110 legal abortions in 2019. In 2021, it issued two rulings declaring parts of the founding EU Treaties incompatible with Poland's Constitution; in December 2025, the Court of Justice of the EU ruled that the Tribunal "does not meet the requirements of an independent and impartial tribunal established by law".

Poland's directly elected President holds the right to veto laws passed by its parliament. A President and a Tribunal aligned against a government can each stop its legislation.

A three-way veto

In 2015, then President Andrzej Duda refused the oaths of five judges elected by the outgoing PO (Civic Platform) party majority; the incoming PiS (Law and Justice) party majority elected replacements. In October 2023, PiS came first with 35.4% of the vote, but Civic Coalition (rebranded PO), Third Way, and the Left formed a 248-seat majority in the 460-seat Sejm, pledging to restore the rule of law. In October 2024, Mr. Duda referred Sejm's two Tribunal reform laws to the Tribunal itself. Mr. Nawrocki, backed by PiS, won the presidency in June 2025 with 50.89% of the vote, and by June 2026 had issued a record 37 vetoes, fact-checker Demagog found.

An override of the Presidential veto needs three-fifths of Sejm votes cast, or 276 if all deputies vote; the current coalition's Tribunal candidates in March 2026 received 236 or 237 votes, *Polskie Radio* reported. Three former Tribunal presidents - Marek Safjan, Jerzy Stępień, and Andrzej Zoll - warned in July that "the state no longer has safeguards".

The European Commission closed its Article 7 rule-of-law procedure against Poland in May 2024, and frozen EU recovery funds were released. But on July 12, 2024, the Sejm rejected a bill decriminalising abortion up to 12 weeks, with deputies from the coalition's own Polish People's Party (PSL) among those voting against.



Police stand guard during a protest outside the premises of Poland's Constitutional Tribunal after the suspension of its president and vice-president in Warsaw on October 31. REUTERS

In 2026, the Sejm elected eight judges; Mr. Nawrocki swore in three.

On May 12, a Tribunal panel ruled that the law does not oblige the President to swear in Sejm-elected judges, a ruling the government does not recognise. The coalition's own choices drew criticism too: on September 4, it elected Maciej Berek, a serving Minister, who Prime Minister Donald Tusk had called his "right-hand man", despite pledging to "depoliticise" the court, *Notes from Poland* reported.

Ms. Korwin-Piotrowska's order accuses Mr. Święczkowski of barring the five judges, ignoring a May 2026 interim measure of the European Court of Human Rights ordering them admitted, and failing to convene the General Assembly of judges to adopt the 2027 budget.

She cited Article 130 of the Common Courts Act, which allows a judge's suspension for up to a month, amid a "state of higher constitutional necessity", *Rzeczpospolita* reported. The State Protection Service, which answers to the Interior Ministry, escorted seven of this year's eight judges into the building. Justice Minister Waldemar Żurek filed five motions to lift the immunity of Mr. Święczkowski and Mr. Sochański. On October 31, Mr. Tusk said reform had been "blocked by the President and PiS" and that "on certain matters there can be no compromise".

In a statement read by his chief of staff, Mr. Nawrocki called the events "a forceful takeover of a constitutional body"; the Tribunal's X account spoke of "the crime of a coup d'état".

'Tribunal can't be saved'

The government coalition has itself split: on October 31, PSL leader Władysław Kosiniak-Kamysz and Szymon Hołownia of Poland 2050 attended Mr. Nawrocki's consultations. They were joined by PiS, far-right Confederation and far-left Razem Opposition parties; KO and the Left stayed away, *TVN24* reported.

Mr. Hołownia said the Tribunal in its current form "cannot be saved". Several participants backed a "constitutional reset" ending all current judges' terms with Constitutional amendments.

Former Prime Minister Mateusz Morawiecki, previously a PiS member, announced a no-confidence motion. European Commissioner Michael McGrath cited the Venice Commission's view that appointing judges falls within "the competence of the Sejm", without endorsing the suspension. An IBRiS poll for *Rzeczpospolita* on October 16-17 found 32% backed Mr. Nawrocki on the oath dispute, 27.8% Mr. Tusk, and 32.7% neither.

Marcin Matczak, a University of Warsaw law professor and critic of PiS's 2015-2023 judicial changes, called the legal basis "non-existent for a million reasons", arguing that Article 130 gives the power to suspend to the Justice Minister, who does not oversee the Tribunal.

Ombudsman Sylwia Gregorczyk-Abram called "constitutional necessity" an "extra-legal view".

Supreme Court judge Włodzimierz Wróbel noted that Article 130 has been previously applied to Supreme Court judges, and that a disciplinary court must decide whether the order was justified "or is a usurpation".

The General Assembly Ms. Korwin-Piotrowska called for November 3 needs 10 of 15 judges present, two more than currently in office.

The Helsinki Foundation for Human Rights, which saw "no clear legal basis" for the order, looked further ahead: a future Sejm, it warned, could elect a long-serving judge who would take over the Tribunal the same way.

(Franciszek Snarski is a Master's student in European Affairs at Sciences Po Paris)

04N11. Poland plunges into crisis over fight for control of constitutional tribunal

संवैधानिक न्यायाधिकरण पर नियंत्रण की लड़ाई से पोलैंड संकट में

- Shortly after 6 p.m. on Friday (October 30), Poland's Constitutional Tribunal announced that the Tribunal's president Bogdan Święczkowski and vice president Bartłomiej Sochański had been suspended for a month.
  शुक्रवार (30 अक्टूबर) को शाम 6 बजे के कुछ ही समय बाद, पोलैंड के संवैधानिक न्यायाधिकरण ने घोषणा की कि उसके अध्यक्ष बोगदान श्विएंचकोव्स्की और उपाध्यक्ष बार्त्वोमिएई सोखांस्की को एक महीने के लिए निलंबित कर दिया गया है।
- The order was signed by judge Anna Korwin-Piotrowska, one of five Sejm (lower house of the Parliament)-elected judges whose oaths President Karol Nawrocki has refused to accept.
  आदेश पर न्यायाधीश अन्ना कोर्विन-पियोत्रोव्स्का ने हस्ताक्षर किए। वह संसद के निचले सदन सेइम द्वारा चुने गए उन पाँच न्यायाधीशों में से एक हैं, जिनकी शपथ राष्ट्रपति कारोल नावरोत्स्की ने स्वीकार करने से इनकार किया है।

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- Police cordoned off the Tribunal building as a mass of protesters tried to force their way through, and Mr. Nawrocki turned his Senegal-bound plane back to Warsaw.
  जब बड़ी संख्या में प्रदर्शनकारियों ने न्यायाधिकरण की इमारत में घुसने की कोशिश की, तब पुलिस ने इमारत को घेर लिया। श्री नावरोत्स्की ने सेनेगल जा रहे अपने विमान को वारसा वापस मोड़ दिया।
- Just before 1 a.m., he walked into the Tribunal and addressed the present members of the judicial body, "You are not Constitutional Tribunal judges".
  रात करीब 1 बजे से कुछ पहले, वे न्यायाधिकरण में दाखिल हुए और वहाँ मौजूद न्यायिक निकाय के सदस्यों से कहा, "आप संवैधानिक न्यायाधिकरण के न्यायाधीश नहीं हैं।"
- A decade-long legal dispute had moved into the building itself.
  दस साल से चला आ रहा कानूनी विवाद अब न्यायाधिकरण की इमारत के भीतर पहुँच गया था।
- The Tribunal has 15 judges, each elected by the Sejm for nine years.
  न्यायाधिकरण में 15 न्यायाधीश होते हैं, जिन्हें सेइम नौ वर्ष के लिए चुनता है।
- In 2021, it issued two rulings declaring parts of the founding EU Treaties incompatible with Poland's Constitution; in December 2025, the Court of Justice of the EU ruled that the Tribunal "does not meet the requirements of an independent and impartial tribunal established by law".
  2021 में उसने दो फैसले दिए, जिनमें यूरोपीय संघ की संस्थापक संधियों के कुछ हिस्सों को पोलैंड के संविधान के प्रतिकूल बताया गया। दिसंबर 2025 में यूरोपीय संघ के न्यायालय ने फैसला सुनाया कि न्यायाधिकरण "कानून द्वारा स्थापित स्वतंत्र और निष्पक्ष न्यायाधिकरण की आवश्यकताएँ पूरी नहीं करता।"
- Poland's directly elected President holds the right to veto laws passed by its parliament.
  पोलैंड के सीधे निर्वाचित राष्ट्रपति को संसद द्वारा पारित कानूनों पर वीटो करने का अधिकार है।
- A President and a Tribunal aligned against a government can each stop its legislation.
  सरकार के विरोध में एकजुट राष्ट्रपति और न्यायाधिकरण, दोनों ही उसके कानूनों को रोक सकते हैं।

A three-way veto
तीनतरफ़ा वीटो

- In 2015, then President Andrzej Duda refused the oaths of five judges elected by the outgoing PO (Civic Platform) party majority; the incoming PiS (Law and Justice) party majority elected replacements.
  2015 में तत्कालीन राष्ट्रपति आंद्रेज़ डूडा ने निवर्तमान PO (सिविक प्लेटफ़ॉर्म) पार्टी के बहुमत द्वारा चुने गए पाँच न्यायाधीशों की शपथ स्वीकार करने से इनकार कर दिया। इसके बाद सत्ता में आए PiS (लॉ एंड जस्टिस) पार्टी के बहुमत ने उनके स्थान पर नए न्यायाधीश चुन लिए।
- In October 2023, PiS came first with 35.4% of the vote, but Civic Coalition (rebranded PO), Third Way, and the Left formed a 248-seat majority in the 460-seat Sejm, pledging to restore the rule of law.
  अक्टूबर 2023 में PiS 35.4% वोट लेकर सबसे बड़ी पार्टी बनी, लेकिन सिविक कोएलिशन (नए नाम वाला PO), थर्ड वे और लेफ़्ट ने 460 सदस्यीय सेइम में 248 सीटों का बहुमत बनाया और क़ानून का शासन बहाल करने का वादा किया।
- An override of the Presidential veto needs three-fifths of Sejm votes cast, or 276 if all deputies vote; the current coalition's Tribunal candidates in March 2026 received 236 or 237 votes, *Polskie Radio* reported.
  राष्ट्रपति के वीटो को पलटने के लिए सेइम में पड़े मतों का तीन-पाँचवाँ हिस्सा आवश्यक है—यदि सभी सांसद मतदान करें तो 276 वोट। *पोल्स्की रेडियो* के अनुसार, मार्च 2026 में मौजूदा गठबंधन के न्यायाधिकरण उम्मीदवारों को 236 या 237 वोट मिले थे।

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04N11	Need for a unified urbanisation plan एकीकृत शहरीकरण योजना की आवश्यकता

Need for a unified urbanisation plan

The Union Budget, Economic Survey and Finance Commission recognise that India is urbanising across a rural-urban continuum. Yet Census 2027 will use the 2011 definitions, deepening the undercount of urban India; a National Urbanisation Policy can recognise this gap and build the institutional and fiscal mechanisms to bridge it

GS III: Economy

ECONOMIC NOTES

Sudeshna Chatterjee
Jaya Dhindaw

India's 2027 Census, happening after 16 years, will classify a settlement as urban if it is either notified by a State as a statutory town or meets three census-town criteria: a population of at least 5,000, a density of at least 400 persons per sq km, and at least 75% of male workers engaged in non-agricultural work. Everything else will be counted as rural.

This preserves comparability across Census years, but it also means the Census will measure urban India with a yardstick that our own economic and fiscal institutions have begun to move beyond.

Measuring urbanisation

In 2011, India had 377 million urban residents across ~8,000 cities and towns. Since then, States have notified another 1,000 statutory towns. The United Nations estimates that 44% of Indians live in urban areas today, projecting the urban population to cross 720 million by 2050.

The growth has been extraordinarily uneven. Greater Mumbai had close to 12 million residents in 2011, while statutory towns like Gangotri Nagar Panchayat in Uttarakhand have a population of 110.

Around 94% of India's urban settlements are small towns, while ~60% of the urban population lives in Class I cities—which includes cities with populations ranging from 1 lakh to 20 million. It lumps together megacities like Mumbai and Delhi with non-metropolitan cities like Mangaluru and Amravati, obscuring radically different needs and capacities. Meanwhile, the fastest growth is unfolding beyond cities: peri-urban areas are expanding at ~4.15% a year, compared to 2.9% growth occurring within administrative boundaries.

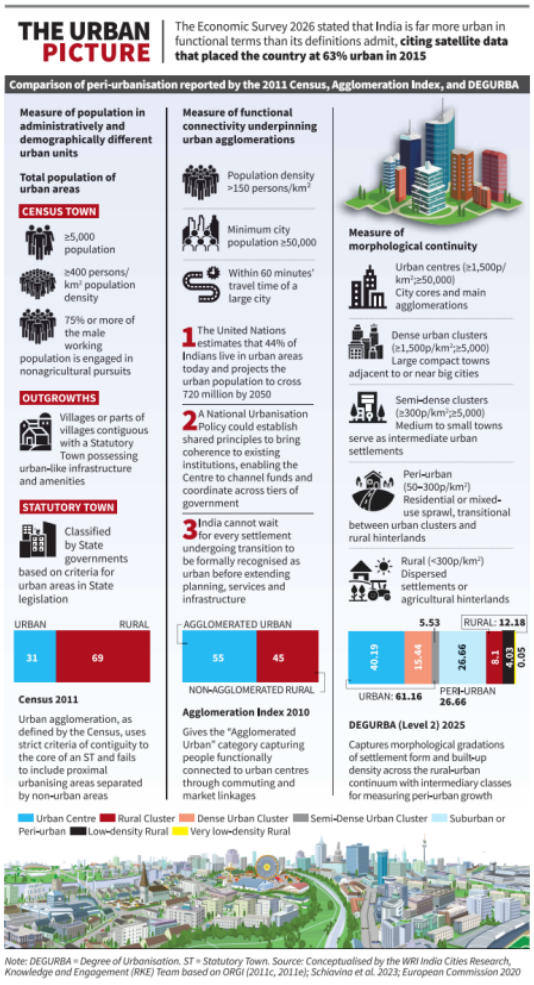
The Economic Survey 2026 stated that India is far more urban in functional terms than its definitions admit, citing satellite data that placed the country at 63% urban in 2015. The 2026 Union Budget allocated ₹5,000 crore each to City Economic Regions, shifting the focus from individual cities to wider economic geographies. The 16th Finance Commission raised the share of local grants earmarked for urban local bodies to 45%. It also created a ₹10,000-crore 'urbanisation premium' to encourage States to merge peri-urban villages into adjoining municipal areas and develop rural-to-urban transition policies.

These measures signal a critical shift, but they do not constitute a coherent framework for recognising transitioning settlements, planning across administrative boundaries or aligning fiscal incentives across India's system of cities. That is the missing link which a National Urbanisation Policy could bridge.

Rethinking the rural-urban binary

Firstly, why does a classification carry so much weight? In India, classification is a gateway. Master plans, municipal finance, Finance Commission grants, building regulation, environmental clearance thresholds and scheme eligibility all depend, in different ways, on how a settlement is classified. This classification is also politically reversible. Article 243Q(2) leaves the notification of an area as urban to the discretion of States, with no standard criteria or requirement to publish reasoning behind the decision.

The law treats rural and urban as mutually exclusive and not a continuum.



Note: DEGURBA = Degree of Urbanisation. ST = Statutory Town. Source: Conceptualised by the WRI India Cities Research, Knowledge and Engagement (RKE) Team based on ORGI [2011c, 2011e); Schiavina et al. 2023; European Commission 2020

Consider Bhiwandi region near Mumbai that spans 60 villages and nine census towns. Here, 91.8% of employment is non-agricultural, yet it is still governed as rural, leaving Panchayats responsible for land use, waste, water and air quality, without a mandate or technical capacity.

The planning consequences are stark. Around 52% of statutory towns and 76% of census towns have no master plan. Nine States have not updated their planning legislation since the 74th Constitutional Amendment in 1992. Meanwhile, the model law most States rely on dates from 1985, and says nothing about the rural-urban continuum, the 74th Amendment, the 2013 Land Acquisition Law, and the emergence of climate adaptation as a planning imperative.

The necessity of national guidance

National guidance on urbanisation already exists, although unacknowledged. Census classification rules, Finance Commission formulae and scheme eligibility criteria, collectively determine which settlements count as urban and what they receive. Because these were not designed as a coherent policy framework, no single institution is answerable for their combined effects.

A National Urbanisation Policy would not prescribe a one-size-fits-all blueprint or a parallel delivery system. Grounded in subsidiarity, it could establish shared principles to build coherence across existing institutions, letting the Centre channel funds, build capacity and coordinate across tiers of government.

The need for a National Urbanisation Policy

WRI India's report '*Equitable, Productive, Low-carbon and Resilient System of Cities in India - Recommendations for a National Urbanisation Policy*' proposes seven systems transformations:

Standardise the definition and classification of statutory urban settlements; modernise spatial and regional planning; reorient public and private finance flows into urbanisation; embed a tiered coordination architecture, anchored by a National Urbanisation Council; build sectoral reforms on functional foundations; align urban politics with reform incentives; and support knowledge exchange and local innovation.

The first three are foundational and their sequence matters. Article 243W makes devolution permissive rather than mandatory, so notification does not automatically transfer all 18 municipal functions listed in the Twelfth Schedule, to newly notified urban areas. A settlement that has not been classified as urban cannot even begin the transition towards receiving critical municipal services. Therefore, settlement status should be reviewed at fixed intervals against set criteria, not only during the Census, using satellite and geospatial data on built-up growth and economic activity, as the Economic Survey recommends.

Spatial planning comes second because every other reform, from housing and infrastructure to climate adaptation and finance, must ultimately be located somewhere. Yet for most Indian settlements, the plans that should guide these decisions do not exist.

The institutional foundations for better coordination do exist. Metropolitan and District Planning Committees have existed under Articles 243ZE and 243ZD of the Constitution for over three decades. Guidance must acquire statutory force to drive change: regional planning must extend below the million-plus threshold as most of the growth is unfolding there. In such areas, peri-urban zoning cannot be optional.

Finance comes third because implementation requires monetary resources. India's municipal revenue is ~1% of GDP, compared with 7.4% in Brazil and 6% in South Africa, while property tax yields only 0.15% of GDP. Piecemeal, scheme-specific transfers leave cities unable to predict cash flow. India has developed a sophisticated set of blended financing instruments, but access is limited. Own-source revenue and formula-based transfers should become the fiscal pillars of urban governance, besides project preparation capacity.

Coordination comes next. The Inter-State Council dates from 1990 and the Central Council of Local Government from 1954. While NITI Aayog routinely brings States together, a National Urbanisation Council could better connect institutions and mechanisms.

The fifth transformation is about jurisdictional fit. Sectoral reforms are generally designed around administrative jurisdictions that do not match the geography of the problem. For instance, 65% of Delhi's PM 2.5 originates outside the city, so a municipal air quality plan cannot succeed, however well-funded. Reforms should be built on functional units – the airshed, the basin, the city region – with institutions empowered at that scale.

The final two transformations concern incentives and learning. Untied grants should reach municipalities directly through a published formula, paired with the knowledge and innovation support that cities need to meet benchmarks.

In most cases, the institution, criterion or instrument already exists. What is missing is regularity, enforceability, reach and accountability for non-performance. India cannot wait for every transitioning settlement to be formally recognised as urban before extending planning, services and infrastructure. A National Urbanisation Policy addresses this by shifting the unit of planning from administrative boundaries to functional areas.

(Sudeshna Chatterjee is Director of Research and Jaya Dhindaw is Executive Director of WRI India's Sustainable Cities Program.)

THE GIST

- The 2027 Census will classify a settlement as urban if it is either notified as a statutory town or meets three census town criteria. This means the Census will measure urban India using a yardstick that the country's own economic and fiscal institutions have begun to move beyond
- Around 94% of India's urban settlements are small towns, while about 60% of its urban population lives in Class I cities. The classification lumps together megacities with non-metropolitan cities, obscuring their radically different needs and capacities
- Grounded in subsidiarity, a National Urbanisation Policy could establish shared principles to build coherence across existing institutions

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04N11. Need for a unified urbanisation plan
एकीकृत शहरीकरण योजना की आवश्यकता

- India's 2027 Census, happening after 16 years, will classify a settlement as urban if it is either notified by a State as a statutory town or meets three census-town criteria: a population of at least 5,000, a density of at least 400 persons per sq km, and at least 75% of male workers engaged in non-agricultural work.
  16 वर्ष बाद होने वाली भारत की 2027 की जनगणना किसी बस्ती को शहरी मानेगी, यदि राज्य ने उसे वैधानिक नगर अधिसूचित किया हो या वह जनगणना नगर के तीन मानदंडों पर खरी उतरती हो: कम-से-कम 5,000 की आबादी, प्रति वर्ग किलोमीटर कम-से-कम 400 लोगों का घनत्व और कम-से-कम 75% पुरुष कामगारों का गैर-कृषि कार्यों में लगा होना।
- Everything else will be counted as rural.
  बाकी सभी बस्तियों को ग्रामीण गिना जाएगा।
- This preserves comparability across Census years, but it also means the Census will measure urban India with a yardstick that our own economic and fiscal institutions have begun to move beyond.
  इससे अलग-अलग जनगणना वर्षों के आँकड़ों की तुलना संभव बनी रहती है, लेकिन इसका अर्थ यह भी है कि जनगणना शहरी भारत को ऐसे पैमाने से मापेगी, जिससे हमारी अपनी आर्थिक और राजकोषीय संस्थाएँ आगे बढ़ना शुरू कर चुकी हैं।

Measuring urbanisation
शहरीकरण का मापन

- In 2011, India had 377 million urban residents across ~8,000 cities and towns.
  2011 में भारत के लगभग 8,000 शहरों और कस्बों में 37.7 करोड़ शहरी निवासी थे।
- Since then, States have notified another 1,000 statutory towns.
  तब से राज्यों ने 1,000 और वैधानिक नगर अधिसूचित किए हैं।
- The United Nations estimates that 44% of Indians live in urban areas today, projecting the urban population to cross 720 million by 2050.
  संयुक्त राष्ट्र का अनुमान है कि आज 44% भारतीय शहरी क्षेत्रों में रहते हैं और 2050 तक शहरी आबादी 72 करोड़ से अधिक हो जाएगी।
- The growth has been extraordinarily uneven.
  यह वृद्धि असाधारण रूप से असमान रही है।
- Greater Mumbai had close to 12 million residents in 2011, while statutory towns like Gangotri Nagar Panchayat in Uttarakhand have a population of 110.
  2011 में ग्रेटर मुंबई की आबादी लगभग 1.2 करोड़ थी, जबकि उत्तराखंड की गंगोत्री नगर पंचायत जैसे वैधानिक नगरों की आबादी केवल 110 है।
- Around 94% of India's urban settlements are small towns, while ~60% of the urban population lives in Class I cities—which includes cities with populations ranging from 1 lakh to 20 million.
  भारत की लगभग 94% शहरी बस्तियाँ छोटे कस्बे हैं, जबकि शहरी आबादी के लगभग 60% लोग प्रथम श्रेणी के शहरों में रहते हैं—इस श्रेणी में एक लाख से दो करोड़ तक की आबादी वाले शहर शामिल हैं।
- It lumps together megacities like Mumbai and Delhi with non-metropolitan cities like Mangaluru and Amravati, obscuring radically different needs and capacities.
  यह मुंबई और दिल्ली जैसे महानगरों को मंगलुरु और अमरावती जैसे गैर-महानगरीय शहरों के साथ एक ही श्रेणी में रखता है और उनकी बिल्कुल अलग ज़रूरतों तथा क्षमताओं को छिपा देता है।
- Meanwhile, the fastest growth is unfolding beyond cities: peri-urban areas are expanding at ~4.15% a year, compared to 2.9% growth occurring within administrative boundaries.

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इस बीच, सबसे तेज़ वृद्धि शहरों के बाहर हो रही है: शहरों के बाहरी छोर से लगे अर्ध-शहरी क्षेत्र सालाना लगभग 4.15% की दर से फैल रहे हैं, जबकि प्रशासनिक सीमाओं के भीतर वृद्धि 2.9% है।

- The Economic Survey 2026 stated that India is far more urban in functional terms than its definitions admit, citing satellite data that placed the country at 63% urban in 2015.
  आर्थिक सर्वेक्षण 2026 ने कहा कि व्यावहारिक अर्थों में भारत का शहरीकरण आधिकारिक परिभाषाओं से कहीं अधिक है। इसमें उपग्रह आँकड़ों का हवाला दिया गया, जिनके अनुसार 2015 में देश की 63% आबादी शहरी थी।
- The 2026 Union Budget allocated ₹5,000 crore each to City Economic Regions, shifting the focus from individual cities to wider economic geographies.
  2026 के केंद्रीय बजट में प्रत्येक सिटी इकोनॉमिक रीजन के लिए ₹5,000 करोड़ आवंटित किए गए, जिससे ध्यान अलग-अलग शहरों से हटकर व्यापक आर्थिक क्षेत्रों पर गया।
- The 16th Finance Commission raised the share of local grants earmarked for urban local bodies to 45%.
  16वें वित्त आयोग ने शहरी स्थानीय निकायों के लिए निर्धारित स्थानीय अनुदानों का हिस्सा बढ़ाकर 45% कर दिया।
- It also created a ₹10,000-crore 'urbanisation premium' to encourage States to merge peri-urban villages into adjoining municipal areas and develop rural-to-urban transition policies.
  उसने राज्यों को अर्ध-शहरी गाँवों को निकटवर्ती नगरपालिका क्षेत्रों में मिलाने और ग्रामीण से शहरी रूपांतरण की नीतियाँ बनाने के लिए प्रोत्साहित करने हेतु ₹10,000 करोड़ का 'शहरीकरण प्रोत्साहन' भी बनाया।
- These measures signal a critical shift, but they do not constitute a coherent framework for recognising transitioning settlements, planning across administrative boundaries or aligning fiscal incentives across India's system of cities.
  ये उपाय एक महत्त्वपूर्ण बदलाव का संकेत देते हैं, लेकिन वे रूपांतरित हो रही बस्तियों को मान्यता देने, प्रशासनिक सीमाओं के पार योजना बनाने या भारत के शहरों की व्यवस्था में राजकोषीय प्रोत्साहनों के तालमेल के लिए कोई सुसंगत ढाँचा नहीं बनाते।
- That is the missing link which a **National Urbanisation Policy** could bridge.
  यही वह कड़ी है जिसे **राष्ट्रीय शहरीकरण नीति** जोड़ सकती है।

Rethinking the rural-urban binary
ग्रामीण-शहरी द्वैत पर पुनर्विचार

- Firstly, why does a classification carry so much weight?
  पहला सवाल यह है कि वर्गीकरण इतना महत्त्वपूर्ण क्यों है?
- In India, classification is a gateway.
  भारत में वर्गीकरण कई सुविधाओं और व्यवस्थाओं तक पहुँच का द्वार है।
- Master plans, municipal finance, Finance Commission grants, building regulation, environmental clearance thresholds and scheme eligibility all depend, in different ways, on how a settlement is classified.
  मास्टर प्लान, नगरपालिका वित्त, वित्त आयोग के अनुदान, भवन विनियमन, पर्यावरणीय मंज़ूरी की सीमाएँ और योजनाओं की पात्रता—ये सभी अलग-अलग तरीकों से इस बात पर निर्भर करते हैं कि किसी बस्ती का वर्गीकरण कैसे किया गया है।
- This classification is also politically reversible.
  इस वर्गीकरण को राजनीतिक निर्णय से बदला भी जा सकता है।
- Article 243Q(2) leaves the notification of an area as urban to the discretion of States, with no standard criteria or requirement to publish reasoning behind the decision.
  अनुच्छेद 243Q(2) किसी क्षेत्र को शहरी अधिसूचित करने का निर्णय राज्यों के विवेक पर छोड़ता है; इसके लिए न तो कोई मानक मानदंड तय हैं और न ही निर्णय के कारण प्रकाशित करना आवश्यक है।

- The law treats rural and urban as mutually exclusive and not a continuum.
  कानून ग्रामीण और शहरी को एक निरंतरता के रूप में नहीं, बल्कि एक-दूसरे से पूरी तरह अलग श्रेणियों के रूप में देखता है।
- Consider Bhiwandi region near Mumbai that spans 60 villages and nine census towns.
  मुंबई के पास भिवंडी क्षेत्र को देखें, जो 60 गाँवों और नौ जनगणना नगरों में फैला है।
- Here, 91.8% of employment is non-agricultural, yet it is still governed as rural, leaving Panchayats responsible for land use, waste, water and air quality, without a mandate or technical capacity.
  यहाँ 91.8% रोज़गार गैर-कृषि क्षेत्र में है, फिर भी इस क्षेत्र का प्रशासन ग्रामीण मानकर किया जाता है। नतीजतन, भूमि-उपयोग, कचरा, पानी और वायु गुणवत्ता की ज़िम्मेदारी पंचायतों पर है, जबकि उनके पास न तो इसके लिए स्पष्ट अधिकार हैं, न तकनीकी क्षमता।
- The planning consequences are stark.
  योजना-निर्माण पर इसके गंभीर परिणाम पड़ते हैं।
- Around 52% of statutory towns and 76% of census towns have no master plan.
  लगभग 52% वैधानिक नगरों और 76% जनगणना नगरों के पास कोई मास्टर प्लान नहीं है।
- Nine States have not updated their planning legislation since the 74th Constitutional Amendment in 1992.
  नौ राज्यों ने 1992 के 74वें संवैधानिक संशोधन के बाद से अपने योजना-संबंधी कानूनों को अद्यतन नहीं किया है।
- Meanwhile, the model law most States rely on dates from 1985, and says nothing about the rural-urban continuum, the 74th Amendment, the 2013 Land Acquisition Law, and the emergence of climate adaptation as a planning imperative.
  इस बीच, अधिकांश राज्यों के आधार के रूप में इस्तेमाल किया जाने वाला आदर्श कानून 1985 का है। उसमें ग्रामीण-शहरी निरंतरता, 74वें संशोधन, 2013 के भूमि अधिग्रहण कानून और योजना में जलवायु अनुकूलन की बढ़ती अनिवार्यता का कोई उल्लेख नहीं है।

The necessity of national guidance
राष्ट्रीय मार्गदर्शन की आवश्यकता

- National guidance on urbanisation already exists, although unacknowledged.
  शहरीकरण पर राष्ट्रीय मार्गदर्शन पहले से मौजूद है, भले ही इसे इस रूप में स्वीकार न किया गया हो।
- Census classification rules, Finance Commission formulae and scheme eligibility criteria, collectively determine which settlements count as urban and what they receive.
  जनगणना के वर्गीकरण नियम, वित्त आयोग के सूत्र और योजनाओं की पात्रता के मानदंड—ये सभी मिलकर तय करते हैं कि किन बस्तियों को शहरी माना जाएगा और उन्हें क्या मिलेगा।
- Because these were not designed as a coherent policy framework, no single institution is answerable for their combined effects.
  चूँकि इन्हें एक सुसंगत नीति-ढाँचे के रूप में तैयार नहीं किया गया था, इसलिए इनके संयुक्त प्रभावों के लिए कोई एक संस्था जवाबदेह नहीं है।
- A **National Urbanisation Policy** would not prescribe a one-size-fits-all blueprint or a parallel delivery system.
  राष्ट्रीय शहरीकरण नीति ऐसा एक ही खाका निर्धारित नहीं करेगी जो हर जगह लागू हो, और न ही समानांतर सेवा-प्रदान व्यवस्था बनाएगी।
- Grounded in subsidiarity, it could establish shared principles to build coherence across existing institutions, letting the Centre channel funds, build capacity and coordinate across tiers of government.
  सहायकता के सिद्धांत पर आधारित यह नीति मौजूदा संस्थाओं के बीच तालमेल बनाने के लिए साझा सिद्धांत

तय कर सकती है, ताकि केंद्र धन उपलब्ध करा सके, क्षमता विकसित कर सके और सरकार के विभिन्न स्तरों के बीच समन्वय कर सके।

The need for a National Urbanisation Policy
राष्ट्रीय शहरीकरण नीति की आवश्यकता

- WRI India's report *Equitable, Productive, Low-carbon and Resilient System of Cities in India – Recommendations for a National Urbanisation Policy* proposes seven systems transformations:
  WRI India की रिपोर्ट *भारत में शहरों की न्यायसंगत, उत्पादक, कम-कार्बन और लचीली व्यवस्था—राष्ट्रीय शहरीकरण नीति के लिए सिफ़ारिशें* व्यवस्था में सात बदलावों का प्रस्ताव करती है:
- Standardise the definition and classification of statutory urban settlements; modernise spatial and regional planning; reorient public and private finance flows into urbanisation; embed a tiered coordination architecture, anchored by a National Urbanisation Council; build sectoral reforms on functional foundations; align urban politics with reform incentives; and support knowledge exchange and local innovation.
  वैधानिक शहरी बस्तियों की परिभाषा और वर्गीकरण को मानकीकृत करना; स्थानिक और क्षेत्रीय योजना का आधुनिकीकरण करना; सार्वजनिक और निजी वित्त के प्रवाह को शहरीकरण की ओर मोड़ना; राष्ट्रीय शहरीकरण परिषद पर आधारित विभिन्न स्तरों वाली समन्वय व्यवस्था स्थापित करना; क्षेत्रवार सुधारों को व्यावहारिक आधार देना; शहरी राजनीति को सुधार के प्रोत्साहनों के अनुरूप बनाना; और ज्ञान के आदान-प्रदान तथा स्थानीय नवाचार को समर्थन देना।
- The first three are foundational and their sequence matters.
  पहले तीन बदलाव बुनियादी हैं और उनका क्रम महत्त्वपूर्ण है।
- Article 243W makes devolution permissive rather than mandatory, so notification does not automatically transfer all 18 municipal functions listed in the Twelfth Schedule to newly notified urban areas.
  अनुच्छेद 243W अधिकारों का हस्तांतरण अनिवार्य नहीं, बल्कि वैकल्पिक बनाता है। इसलिए किसी क्षेत्र को शहरी अधिसूचित कर देने से बारहवीं अनुसूची में सूचीबद्ध नगरपालिका के सभी 18 कार्य अपने-आप उस नए शहरी क्षेत्र को नहीं सौंपे जाते।
- A settlement that has not been classified as urban cannot even begin the transition towards receiving critical municipal services.
  जिस बस्ती को शहरी के रूप में वर्गीकृत नहीं किया गया है, वह आवश्यक नगरपालिका सेवाएँ पाने की दिशा में परिवर्तन की शुरुआत भी नहीं कर सकती।
- Therefore, settlement status should be reviewed at fixed intervals against set criteria, not only during the Census, using satellite and geospatial data on built-up growth and economic activity, as the Economic Survey recommends.
  इसलिए, आर्थिक सर्वेक्षण की सिफ़ारिश के अनुसार, बस्तियों की स्थिति की समीक्षा केवल जनगणना के दौरान नहीं, बल्कि तय मानदंडों के आधार पर नियमित अंतराल पर की जानी चाहिए। इसके लिए निर्मित क्षेत्र के विस्तार और आर्थिक गतिविधियों से जुड़े उपग्रह तथा भू-स्थानिक आँकड़ों का उपयोग किया जा सकता है।
- Spatial planning comes second because every other reform, from housing and infrastructure to climate adaptation and finance, must ultimately be located somewhere.
  दूसरा स्थान स्थानिक योजना का है, क्योंकि आवास और बुनियादी ढाँचे से लेकर जलवायु अनुकूलन और वित्त तक, हर सुधार को अंततः किसी स्थान पर लागू करना होता है।
- Yet for most Indian settlements, the plans that should guide these decisions do not exist.
  फिर भी, भारत की अधिकांश बस्तियों में ऐसे निर्णयों का मार्गदर्शन करने वाली योजनाएँ मौजूद नहीं हैं।
- The institutional foundations for better coordination do exist.
  बेहतर समन्वय के लिए संस्थागत आधार मौजूद हैं।
- Metropolitan and District Planning Committees have existed under Articles 243ZE and 243ZD of the Constitution for over three decades.

संविधान के अनुच्छेद 243ZE और 243ZD के तहत महानगरीय और ज़िला योजना समितियाँ तीन दशकों से अधिक समय से अस्तित्व में हैं।

- Guidance must acquire statutory force to drive change: regional planning must extend below the million-plus threshold as most of the growth is unfolding there.
  बदलाव लाने के लिए मार्गदर्शन को वैधानिक बल मिलना चाहिए: क्षेत्रीय योजना दस लाख से कम आबादी वाले क्षेत्रों तक भी पहुँचनी चाहिए, क्योंकि अधिकांश वृद्धि वहीं हो रही है।
- In such areas, peri-urban zoning cannot be optional.
  ऐसे क्षेत्रों में अर्ध-शहरी ज़ोनिंग को वैकल्पिक नहीं छोड़ा जा सकता।
- Finance comes third because implementation requires monetary resources.
  तीसरा स्थान वित्त का है, क्योंकि योजनाओं को लागू करने के लिए धन चाहिए।
- India's municipal revenue is ~1% of GDP, compared with 7.4% in Brazil and 6% in South Africa, while property tax yields only 0.15% of GDP.
  भारत में नगरपालिका राजस्व GDP का लगभग 1% है, जबकि ब्राज़ील में यह 7.4% और दक्षिण अफ़्रीका में 6% है; वहीं संपत्ति कर से केवल 0.15% GDP के बराबर राजस्व मिलता है।
- Piecemeal, scheme-specific transfers leave cities unable to predict cash flow.
  टुकड़ों में और अलग-अलग योजनाओं के लिए मिलने वाले हस्तांतरण के कारण शहर अपने नकदी प्रवाह का अनुमान नहीं लगा पाते।
- India has developed a sophisticated set of blended financing instruments, but access is limited.
  भारत ने मिश्रित वित्तपोषण के कई परिष्कृत साधन विकसित किए हैं, लेकिन उन तक पहुँच सीमित है।
- Own-source revenue and formula-based transfers should become the fiscal pillars of urban governance, besides project preparation capacity.
  परियोजनाएँ तैयार करने की क्षमता के साथ-साथ, स्वयं जुटाया गया राजस्व और सूत्र-आधारित हस्तांतरण शहरी शासन के राजकोषीय आधार बनने चाहिए।
- Coordination comes next.
  इसके बाद समन्वय का स्थान है।
- The Inter-State Council dates from 1990 and the Central Council of Local Government from 1954.
  अंतर-राज्य परिषद 1990 से और केंद्रीय स्थानीय शासन परिषद 1954 से अस्तित्व में है।
- While NITI Aayog routinely brings States together, a National Urbanisation Council could better connect institutions and mechanisms.
  नीति आयोग नियमित रूप से राज्यों को साथ लाता है, लेकिन राष्ट्रीय शहरीकरण परिषद संस्थाओं और व्यवस्थाओं के बीच बेहतर तालमेल बना सकती है।
- The fifth transformation is about jurisdictional fit.
  पाँचवाँ बदलाव प्रशासनिक अधिकार-क्षेत्र को वास्तविक ज़रूरतों के अनुरूप बनाने से जुड़ा है।
- Sectoral reforms are generally designed around administrative jurisdictions that do not match the geography of the problem.
  क्षेत्रवार सुधार आम तौर पर उन प्रशासनिक सीमाओं के आधार पर बनाए जाते हैं जो समस्या के वास्तविक भौगोलिक दायरे से मेल नहीं खातीं।
- For instance, 65% of Delhi's PM 2.5 originates outside the city, so a municipal air quality plan cannot succeed, however well-funded.
  उदाहरण के लिए, दिल्ली के PM2.5 प्रदूषण का 65% हिस्सा शहर के बाहर से आता है, इसलिए नगरपालिका की वायु गुणवत्ता योजना को कितना भी धन मिले, वह सफल नहीं हो सकती।
- Reforms should be built on functional units — the airshed, the basin, the city region — with institutions empowered at that scale.
  सुधार व्यावहारिक इकाइयों—वायु-क्षेत्र, नदी-बेसिन और नगर-क्षेत्र—पर आधारित होने चाहिए और इन पैमानों पर काम करने वाली संस्थाओं को अधिकार दिए जाने चाहिए।

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- The final two transformations concern incentives and learning.
  अंतिम दो बदलाव प्रोत्साहनों और सीखने से जुड़े हैं।
- Untied grants should reach municipalities directly through a published formula, paired with the knowledge and innovation support that cities need to meet benchmarks.
  नगरपालिकाओं को बिना शर्त अनुदान प्रकाशित सूत्र के आधार पर सीधे मिलना चाहिए, साथ ही उन्हें मानक पूरे करने के लिए आवश्यक ज्ञान और नवाचार संबंधी सहायता भी दी जानी चाहिए।
- In most cases, the institution, criterion or instrument already exists.
  अधिकांश मामलों में, संस्था, मानदंड या साधन पहले से मौजूद है।
- What is missing is regularity, enforceability, reach and accountability for non-performance.
  जिस चीज़ की कमी है, वह है नियमितता, लागू किए जा सकने की क्षमता, व्यापक पहुँच और काम न करने पर जवाबदेही।
- India cannot wait for every transitioning settlement to be formally recognised as urban before extending planning, services and infrastructure.
  योजना, सेवाओं और बुनियादी ढाँचे का विस्तार करने से पहले भारत हर बदलती हुई बस्ती को औपचारिक रूप से शहरी मान्यता मिलने का इंतज़ार नहीं कर सकता।
- A **National Urbanisation Policy** addresses this by shifting the unit of planning from administrative boundaries to functional areas.
  राष्ट्रीय शहरीकरण नीति योजना की इकाई को प्रशासनिक सीमाओं से बदलकर व्यावहारिक क्षेत्रों पर केंद्रित करके इस समस्या का समाधान कर सकती है।

GS Paper III: Science and Technology	04 November 2026
TOPICS COVERED	
04N11	In snails, a mother's hidden genes decide which way her baby spirals घोंघों में माँ के छिपे जीन तय करते हैं कि उसके बच्चे का खोल किस दिशा में कुंडलित होगा
04N11	Green Crackers: An Oxymoron? ग्रीन पटाखे: क्या यह एक विरोधाभास है?

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In snails, a mother's hidden genes decide which way her baby spirals

In 2023, after poring through photos posted online by hikers, a researcher found a location in north Japan where there were both left and right-handed snails of a single species; their shells also looked similar, suggesting the snails had interbred; this new population provided important clues about how the myosin gene worked

GS III; S&T

D.P. Kasbekar

With a bit of penmanship, 'e' and '9' can be made to look like mirror images of each other. While the 'e' swings counter-clockwise, the '9' swings clockwise, written from top to bottom. Snails also can be similarly left- or right-handed depending on which way their shells coil.

But what decides which way the shell turns? Recently, scientists from the U.K. and Japan found the answer for Japanese *Euhadra* snails.

It depends on which variants of the gene for an unconventional myosin protein are present in the mother. Like us, snails possess two copies of every gene, one copy comes from the mother via the egg, and the other from the father via the sperm. When sperm and eggs are made, each receives only one copy of each gene pair.

The findings were published in *Current Biology* on October 16.



Like humans, snails also can be left or right-handed depending on which way their shells coil. KRZYSZTOF NIEWOLNY/UNSPLASH

THEGIST

Like humans, snails possess two copies of every gene, one from the mother via the egg, and the other from the father via the sperm; when sperm ar eggs are made, each receives only one copy of each gene pair

The reproductive system in a snail is located close to its head on the right side; thus mating between snails becomes awkward when they are opposite-handed, resultin in only partial mating

A myosin gene mutation is linked to shell handedness in *Euhadra* snails, with distinct variants found in left and right-handed populations

Twisted trysts

Sex is startlingly different in snails than in, say, humans. For one, snails are hermaphrodites: an individual snail makes both sperm and eggs. For another, the outer opening of the reproductive system, called the genital pore, is located close to its head, on the right side. It is, however, almost invisible unless actively in use.

When snails mate, each partner protrudes a penis through the genital pore. Two penises of a mating pair enter each other's vaginal ducts, also in the pore. After exchanging sperm, the pair separates. Like two friends who shake hands, coupling is straightforward between same-handed snails. But if they are opposite handed, coupling becomes awkward, like one person extending their left hand and the other their right. The union can only be partly consummated as a result.

Handedness variants

Most *Euhadra* species are right-handed; four are left-handed. But only one of them, *Euhadra quaesita*, had both right- and left-handed populations. The researchers collected *E. quaesita* snails from three locations in north Japan. Each population was either fully right-handed or fully left-handed. The researchers also sampled the other *Euhadra* species, including all the four left-handed ones.

They sequenced the genomes of all the collected snails and searched for DNA sequences whose alternative versions correlated with left- and right-handedness. This is how they found the same variant of the myosin gene in all left-handed snails. They called it S (for sinistral, which is the Latin for "left-hand side"). All the right-handed snails contained the other variant of the myosin gene, which they called D (for dextral).

In 2023, one of the researchers found a location in north Japan where there were both left- and right-handed *E. quaesita* snails, after poring through photos posted online by hikers. Their shells also looked outwardly similar, suggesting the snails had interbred. This new population provided important clues about how the myosin gene worked.

The left-handed snails from this site included individuals with the myosin gene variants SS, DS, and DD, and right-handed ones included DD and DS, but not SS.

Maternal effect

There are two parts to the explanation.

First, an individual snail's handedness is determined by its mother's genes, not its own. Handedness is decided very early in the baby snail, even before its own genes begin to express themselves.

Second, if the mother has even only a single S variant (i.e. she is SD or SS), the offspring will be left-handed. Right-handedness only emerges if the mother is DD.

One right-handed snail collected from the site found in 2023 produced left-handed offspring in the laboratory. Which means it received its S variant from its father.

Likewise, the populations from the older three locations were uniformly SS or DD. Therefore, the maternal effect and dominance could not be inferred from them alone.

The myosin gene makes a protein of the same name, which helps cells make a complex with the actin protein. In our muscles, this actomyosin complex converts chemical energy into mechanical force and allows our bodies to move. In other cells, the complex drives cell division and cell movement.

'An exceptional model'

Earlier this year, researchers from Chiba University in Japan published a paper in the journal *Proceedings of the National Academy of Sciences* reporting that filaments made of actin can be made to slide on a glass surface coated with myosin.

When the glass surface was coated with myosin from rabbit skeletal muscle, the actin filaments moved in a roughly straight path. In contrast, when the surface was coated with myosin from a green alga, the actin filaments moved in a clockwise curve. This revealed that some, but not all, myosin proteins can promote actin filament to move in a curved path.

The clockwise curve is an asymmetry at the molecular scale. It can change the axis of cell division relative that of the preceding division. The extent of change can differently impact cell-cell interactions of the daughter cells. This is asymmetry at the cellular scale.

"This paradigm offers a mechanistic basis for how motor-driven molecular asymmetry can give rise to coherent structural chirality at the cellular scale - an essential step in the emergence of cell chirality and asymmetry during development" the authors wrote. Chirality is the difference between left- and right-handedness.

What trajectories might the filament take on glass surfaces coated with *Euhadra* S- or D-myosin? The S version contains eight amino acid changes compared with the D version. One or more of them might contribute to a changed trajectory and thus trigger the change in handedness. The authors of the snail study concluded by saying "testing these ideas experimentally will provide important insight into the evolutionary plasticity of symmetry-breaking systems."

"This discovery deepens our understanding of how molecular-scale asymmetries propagate to the level of the whole body," they added, "and highlights snails as an exceptional model for dissecting the fundamental origins of left and right."

(D.P. Kasbekar is a retired scientist. kasbekardp@yahoo.co.in)

04N11. In snails, a mother's hidden genes decide which way her baby spirals
घोंघों में माँ के छिपे जीन तय करते हैं कि उसके बच्चे का खोल किस दिशा में कुंडलित होगा

- **"A baby snail inherits genes from both parents, but its shell's direction can depend on its mother's gene combination."**
- Hold up **left and right hands**.
- "Your hands are mirror images, but they cannot fit perfectly over each other when both palms face the same direction. This property is called **chirality**."
- Similarly, snail shells can have **right-handed or left-handed coiling**.

Two mirror-image shells with their **tips pointing upward and their openings facing the students**:

- An opening on the **right** indicates a **dextral**, or right-handed, shell.
- An opening on the **left** indicates a **sinistral**, or left-handed, shell.

Basic Genetics

T**wo instruction cards**.

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"An individual normally has two copies of this gene—one inherited from each parent. Different versions of a gene are called **alleles**."

The versions are labelled **S** and **D**.

Possible combination	What it means
SS	Two S copies.
SD, or **DS**	One S copy and one D copy.
DD	Two D copies.

- **Genotype** means the gene combination, such as **SD**.
- **Phenotype** means the observable characteristic, such as a **left-coiling shell**.

Check the Mother's Genotype

- "Normally, we expect an organism's own genotype to help explain its appearance. Here, the shell's direction is established extremely early, under the influence of substances supplied in the egg by the mother."
- The **mother's genotype** determines this early developmental influence.

Egg-producing parent's genotype	Expected shell direction of its offspring under the article's model
SS	**Left-handed.**
SD	**Left-handed.**
DD	**Right-handed.**

- Thus, **S is dominant in the maternal-effect system**: one S copy in the mother is sufficient for the left-handed outcome.
- The research identifies variation in an unconventional **myosin I a/b gene** as the basis of coiling variation in Japanese **Euhadra** snails. It was published in *Current Biology* on **16 October 2026**.

Three-Generation Example

- **Generation 1: The egg-producing parent is DD.**
- It mates with an **SS sperm-producing parent**.
- **Generation 2: Their offspring are SD—but their shells coil right.**
- Explain:
- "Each offspring receives D from one parent and S from the other, making it **SD**. However, its shell direction follows its **DD mother's genotype**, so it develops a right-handed shell."
- **Generation 3: When an SD offspring becomes the egg-producing parent, its babies coil left.**
- Its **S allele now influences the eggs it produces**.

Generation	Relevant genotype	Shell outcome

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Generation	Relevant genotype	Shell outcome
First generation	Egg-producing parent: **DD**.	Determines right-handed offspring.
Second generation	Offspring: **SD**.	Right-handed because its mother was DD.
Third generation	Eggs produced by that **SD** individual.	Offspring develop left-handed shells.

- **"To predict this snail's shell direction, look at its mother's genotype; to predict its offspring's direction, look at its own genotype."**

Myosin as a Tiny Molecular Motor

"Cells are not bags of motionless chemicals. They contain tiny structures that move, pull and help organise the cell."

- **Actin** forms filaments that help give cells structure and support movement.
- **Myosin** is a motor protein that interacts with actin and uses chemical energy to generate movement or force.
- Changes in these interactions can help influence **cell shape and the organisation of early development**.

Green firecrackers: an oxymoron?

GS III: S&T

Vasudevan Mukunth

Green firecrackers — like those the Supreme Court recently allowed the residents of New Delhi to burst for two days for Deepavali — are designed to pollute the air less as they burn.

According to the CSIR-National Environmental Engineering Research Institute (NEERI) team that developed them, these firecrackers emit 30% less particulate matter or, alternatively, emit 20% less particulate matter and 10% less gases — both compared to conventional firecrackers in the same category.

To this end, the team reportedly changed the proportions of fuels and oxidisers to increase how efficiently each cracker burnt, added additives to suppress dust formation, and/or reduced the quantities of certain metals.

Thus CSIR-NEERI developed three kinds of green firecrackers: Safe Water Releaser (SWAS), whose ingredients release water to suppress some of the particulate matter produced as they burn; Safe Thermite Cracker (STAR), which use a thermite-based composition to achieve higher combustion efficiency and lower emissions; and Safe Minimal Aluminium (SAFAL), which have lower aluminium content and, again, emit less.

Each of SWAS, STAR or SAFAL can be used in different types of fireworks, e.g. sparklers, flowerpots, etc.

All green firecracker products carry a CSIR-NEERI logo on their packaging and a QR code to verify the product's certificate.

While they pollute the air less, these firecrackers are still polluting — their emissions include fine particulate matter, noxious gases, and other combustion products — and harm respiratory and cardiovascular health. They are also noisy.



People buy crackers at ahead of Deepavali in Tamil Nadu on Friday. LAKSHMI NARAYANAN E

A city that bursts only green firecrackers also need not have less polluted air as that depends on the number of crackers burst, the local weather, and existing pollution levels.

For feedback and suggestions for 'Science', please write to **science@thehindu.co.in** with the subject 'Daily page'

04N11. Green Crackers: An Oxymoron?

ग्रीन पटाखे: क्या यह एक विरोधाभास है?

- **"Green crackers cause less pollution per comparable cracker; they do not produce clean air."**
- **"If one vehicle produces less smoke than another, does that mean it produces no pollution?"**
- The answer is **no**. Similarly, calling a cracker **"green"** describes an improvement over a conventional product, rather than complete environmental safety.

What Is an Oxymoron?

- An **oxymoron** combines apparently contradictory ideas—for example, **"deafening silence."**

Here, the apparent contradiction is:

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- **"Green"** suggests environmental friendliness.
- **"Crackers"** involve combustion, emissions and noise.

The title asks whether the word **green creates an exaggerated impression of safety**.

- **A balanced interpretation:** The term is meaningful when understood as **"reduced-emission crackers"**, but misleading when understood as **"harmless crackers."**
- **What Comes Out of a Cracker**
- "When a cracker burns, a chemical reaction releases energy as light, heat and sound. It also releases combustion products."

Term	Simple explanation
Fuel	The material that burns and releases energy.
Oxidiser	A substance that supplies the oxidising capacity needed for burning.
Particulate matter, or PM	Tiny solid particles or liquid droplets suspended in the air.
Gaseous emissions	Gases released during the reaction.
Noise pollution	Unwanted or excessive sound produced during bursting.

- **Visible smoke is only part of the problem.** Some particles are too small to see individually, and gases need not be visible.

Comparable cracker	Particulate emissions
Conventional cracker	**100 units**
Green cracker with a 30% reduction	**70 units**
Reduction achieved	**30 units**

- **"Has the pollution disappeared?"**
- No. **Seventy units remain.**
- Official criteria specify either **at least 30% lower particulate emissions**, or **at least 20% lower particulate emissions together with the specified gaseous-emission reduction**, compared with conventional formulations in the same category.

Three Technologies Through Their Purpose

Formulation	Basic approach	Memory aid
SWAS — Safe Water Releaser	Uses a water-releasing approach to help suppress particulate emissions.	**Water helps capture particles.**
STAR — Safe Thermite Cracker	Uses a modified composition to improve combustion efficiency and reduce emissions.	**Improve the burning process.**
SAFAL — Safe Minimal Aluminium	Reduces aluminium use through a modified formulation.	**Use less aluminium.**

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These are **formulation approaches**, rather than merely three shapes of fireworks. Their actual emission reductions depend on the particular product and testing.

Situation	Calculation	Total particulate emissions
100 conventional crackers	100 × 100 units	**10,000 units**
100 green crackers	100 × 70 units	**7,000 units**
200 green crackers	200 × 70 units	**14,000 units**

- **"Which creates more total emissions: 100 conventional crackers or 200 green crackers?"**
- **Total emissions = emissions per cracker × number of crackers used.**
- This simplified calculation assumes comparable crackers and the same reduction per cracker. It demonstrates why **cleaner technology can be overwhelmed by greater consumption**.

Emissions from Air Quality

- "Imagine the same amount of chalk dust released in two rooms. One has open windows and moving air; the other is closed. The concentration people breathe can differ."

Likewise, outdoor pollution concentrations depend on:

- **How much pollution is released.**
- **Wind and atmospheric mixing**, which influence dispersal.
- **Temperature inversions**, which can restrict vertical mixing.

- **Existing pollution** from traffic, industry, dust and other sources.

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TOPICS COVERED	
04N11	Digital pathogen: why cyber hygiene is no longer considered an option डिजिटल रोगाणु: साइबर स्वच्छता अब विकल्प क्यों नहीं रही

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Digital pathogen: why cyber hygiene is no longer considered as an option

In cyberspace, neglecting basic hygiene can be as deadly as ignoring an epidemic, the opportunity cost of which is not merely in money lost, but disrupted businesses, compromised identities, regulatory liabilities and above all eroded public trust; average cost of a data breach in India is ₹25.5 cr.

GS III: Internal Security: Cyber Security
EXPLAINER

Santosh V. Perumal



Equally vulnerable: Cyber risks do not discriminate sectors. GETTY IMAGES/ISTOCKPHOTO

Even as the stains of Covid-19 has yet to recede entirely in the physical world, the pathogen in the digital age – poor cyber hygiene – has found foothold across sectors that it has not even spared the authenticating agency.

The term cyber hygiene, the first line of defence against cybercrime, increasingly got into the vocabulary after financial institutions and public bodies suffered serious security scares.

In cyberspace, neglecting basic hygiene can be as deadly as ignoring an epidemic, the opportunity cost of which is not merely in money lost, but disrupted businesses, compromised identities, regulatory liabilities and above all eroded public trust.

Digital trust, like public health, depends upon a simple principle: prevention is invariably cheaper than the cure. It was Internet pioneer Vinton Cerf, who coined the term cyber hygiene in 2000, when he used it in his testimony before the U.S. Congress' Joint Economic Committee.

"Good cyber hygiene is essential for staying safe in today's digital world. Simple and responsible online practices can go a long way in protecting your personal and financial information," says a mail from a nationalised bank to a customer. Global average cost of a data breach slid to $4.44 million, down 9% year-on-year (YoY) while it rose in India, an IBM 2025 report said.

The IBM's 2026, report, released in August, puts average cost of a data breach in India at ₹25.5 crore, up 15.9% YoY. The breach compromised 39,500 records against 38,200 in the previous year. The financial services sector faced an even higher average cost of ₹40.9 crore/breach.

The IBM report measures the average total organisational cost of a breach, including detection, investigation, recovery, business disruption and reputational damage.

> The term cyber hygiene, the first line of defence against cybercrime, increasingly got into the vocabulary after financial institutions and public bodies suffered serious security scares

Banking vulnerable

The data assumes importance especially in the country's systemically important banking sector, as compromised information can lead to identity theft, financial fraud and further attacks on customers.

Against this backdrop, reported or suspected data exposures involving State Bank of India and HDFC Bank highlight India's rising and sophisticated cybersecurity challenge.

Cyber risks do not discriminate sectors as seen from reported issues involving in the Central Board of Film Certification (CBFC) and digital-certification company eMudhra.

Banks hold financial and identity data, sovereign bodies manage sensitive public records and certification bodies underpin digital trust. Hence, vulnerability in any of these could lead to far-reaching consequences. Security must therefore extend across the entire technology supply chain.

In a reply to Parliament, the Union Home Ministry reported increasing financial cyber-fraud losses from ₹551 crore in 2021 to ₹2,290 crore in 2022, ₹7,465 crore in 2023, ₹22,848 crore in 2024 and marginally dipping to ₹22,495 crore in 2025.

As per Reserve Bank of India (RBI) data, in FY2023-24, banks reported 36,075 fraud cases involving ₹13,930 crore. Of these, 29,082 cases related to cards or internet banking, which accounted for ₹1,457 crore.

Actual losses

However, the central bank data comes with a caveat that the amount involved in reported frauds is not equivalent to actual loss incurred. Recoveries may reduce the loss and frauds reported in one financial year may have occurred years earlier.

Notable international historical cases such as Equifax (2017) and Capital One (2019) illustrate the potential financial consequences in terms of settlements and judicial costs.

Even as India's rapid digital transformation has widened and deepened the reach of the banking industry, it has exposed the sector more to cyber risks.

The integrated financial ecosystem – comprising UPI, mobile banking, internet banking and digital lending – complicated the complex architecture that the vulnerabilities at one point can have dire consequences far beyond it.

The National Payments Corporation of India data suggest that UPI processed around 186 billion transactions during 2024-25, illustrating the scale of digital payments infrastructure.

Indispensable practice

This growth makes cyber hygiene – the routine practices to keep digital systems, devices and data secure – indispensable for all stakeholders alike – banks, customers, technology vendors, payment intermediaries and regulators.

In view of this, campaigns have already been strengthened on the need for effective cyber hygiene action at various levels.

Individual level cyber hygiene calls for employing unique, strong passwords/password managers, enabling multifactor authentication, installing software updates and avoid clicking suspicious links.

Corporate level measures suggest embedding security into operations with timely patching, encryption, secure software, phishing simulations, independent penetration testing and regular incident-response exercises.

And finally...

Just as the pace of transactions is important, the integrity of systems and institutions behind it is integral to the credibility of digital finance.

04N11. Digital pathogen: why cyber hygiene is no longer considered an option
डिजिटल रोगाणु: साइबर स्वच्छता अब विकल्प क्यों नहीं रही

- Even as the stains of Covid-19 have yet to recede entirely in the physical world, the pathogen in the digital age — poor **cyber hygiene** — has found a foothold across sectors, and it has not even spared the authenticating agency.
  भौतिक दुनिया में कोविड-19 के दुष्प्रभाव पूरी तरह मिटे भी नहीं हैं कि डिजिटल युग के रोगाणु—खराब **साइबर स्वच्छता**—ने कई क्षेत्रों में पैर जमा लिए हैं और प्रमाणीकरण करने वाली संस्था को भी नहीं छोड़ा है।
- The term **cyber hygiene**, the first line of defence against cybercrime, increasingly entered the vocabulary after financial institutions and public bodies suffered serious security scares.
  साइबर अपराध के खिलाफ़ रक्षा की पहली पंक्ति **साइबर स्वच्छता** शब्द का इस्तेमाल तब तेज़ी से बढ़ा, जब वित्तीय संस्थानों और सार्वजनिक निकायों को सुरक्षा से जुड़े गंभीर ख़तरों का सामना करना पड़ा।
- In cyberspace, neglecting basic hygiene can be as deadly as ignoring an epidemic, the opportunity cost of which is not merely in money lost, but disrupted businesses, compromised identities, regulatory liabilities and, above all, eroded public trust.
  साइबर जगत में बुनियादी सुरक्षा की अनदेखी करना किसी महामारी की अनदेखी करने जितना घातक हो

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सकता है। इसकी अवसर-लागत केवल धन के नुकसान तक सीमित नहीं रहती, बल्कि कारोबार बाधित होते हैं, पहचान से जुड़ी जानकारी असुरक्षित होती है, नियामकीय देनदारियाँ पैदा होती हैं और सबसे बढ़कर, जनता का भरोसा कमज़ोर होता है।

- **Digital trust**, like public health, depends upon a simple principle: prevention is invariably cheaper than the cure.
  जनस्वास्थ्य की तरह **डिजिटल भरोसा** भी एक सरल सिद्धांत पर निर्भर करता है: रोकथाम हमेशा इलाज से सस्ती होती है।
- It was Internet pioneer Vinton Cerf who coined the term cyber hygiene in 2000, when he used it in his testimony before the U.S. Congress' Joint Economic Committee.
  इंटरनेट के अग्रदूत विंट सर्फ़ ने 2000 में "साइबर स्वच्छता" शब्द गढ़ा था। उन्होंने अमेरिकी कांग्रेस की संयुक्त आर्थिक समिति के सामने अपनी गवाही में इसका इस्तेमाल किया था।
- "Good cyber hygiene is essential for staying safe in today's digital world.
  "आज की डिजिटल दुनिया में सुरक्षित रहने के लिए अच्छी साइबर स्वच्छता ज़रूरी है।
- Simple and responsible online practices can go a long way in protecting your personal and financial information," says a mail from a nationalised bank to a customer.
  ऑनलाइन सरल और ज़िम्मेदार आदतें आपकी निजी और वित्तीय जानकारी की सुरक्षा में काफ़ी मदद कर सकती हैं," एक राष्ट्रीयकृत बैंक ने अपने ग्राहक को भेजे ईमेल में कहा।
- The global average cost of a data breach slid to $4.44 million, down 9% year-on-year (YoY), while it rose in India, an IBM 2025 report said.
  IBM की 2025 की रिपोर्ट के अनुसार, डेटा उल्लंघन की वैश्विक औसत लागत 9% साल-दर-साल (YoY) घटकर 4.44 मिलियन डॉलर हो गई, जबकि भारत में यह बढ़ी।
- The IBM 2026 report, released in August, puts the average cost of a data breach in India at ₹25.5 crore, up 15.9% YoY.
  अगस्त में जारी IBM की 2026 की रिपोर्ट के अनुसार, भारत में डेटा उल्लंघन की औसत लागत ₹25.5 करोड़ रही, जो साल-दर-साल 15.9% अधिक है।
- The breach compromised 39,500 records against 38,200 in the previous year.
  इस उल्लंघन में 39,500 रिकॉर्ड असुरक्षित हुए, जबकि पिछले वर्ष यह संख्या 38,200 थी।
- The financial services sector faced an even higher average cost of ₹40.9 crore per breach.
  वित्तीय सेवा क्षेत्र में प्रति डेटा उल्लंघन की औसत लागत इससे भी अधिक, ₹40.9 करोड़ रही।
- The IBM report measures the average total organisational cost of a breach, including detection, investigation, recovery, business disruption and reputational damage.
  IBM की रिपोर्ट में डेटा उल्लंघन से जुड़ी संगठन की औसत कुल लागत मापी जाती है, जिसमें उसका पता लगाने, जाँच, बहाली, कारोबार में व्यवधान और प्रतिष्ठा को हुई क्षति का खर्च शामिल है।

Banking vulnerable
बैंकिंग क्षेत्र असुरक्षित

- The data assumes importance especially in the country's systemically important banking sector, as compromised information can lead to identity theft, financial fraud and further attacks on customers.
  इन आँकड़ों का महत्त्व देश के प्रणालीगत रूप से महत्त्वपूर्ण बैंकिंग क्षेत्र में विशेष रूप से बढ़ जाता है, क्योंकि जानकारी के असुरक्षित होने से पहचान की चोरी, वित्तीय धोखाधड़ी और ग्राहकों पर आगे के हमले हो सकते हैं।
- Against this backdrop, reported or suspected data exposures involving State Bank of India and HDFC Bank highlight India's rising and sophisticated cybersecurity challenge.
  इस पृष्ठभूमि में, भारतीय स्टेट बैंक और HDFC बैंक से जुड़े डेटा के कथित या संदिग्ध रूप से उजागर होने के मामले भारत के बढ़ते और अधिक जटिल साइबर सुरक्षा संकट को सामने लाते हैं।
- Cyber risks do not discriminate between sectors, as seen from reported issues involving the Central Board of Film Certification (CBFC) and digital-certification company eMudhra.

केंद्रीय फिल्म प्रमाणन बोर्ड (CBFC) और डिजिटल प्रमाणन कंपनी eMudhra से जुड़ी रिपोर्ट की गई समस्याएँ दिखाती हैं कि साइबर जोखिम किसी क्षेत्र को नहीं छोड़ते।

- Banks hold financial and identity data, sovereign bodies manage sensitive public records and certification bodies underpin digital trust.
  बैंकों के पास वित्तीय और पहचान संबंधी डेटा होता है, सरकारी निकाय संवेदनशील सार्वजनिक रिकॉर्ड सँभालते हैं और प्रमाणन संस्थाएँ डिजिटल भरोसे का आधार होती हैं।
- Hence, vulnerability in any of these could lead to far-reaching consequences.
  इसलिए, इनमें से किसी की भी कमज़ोरी के दूरगामी परिणाम हो सकते हैं।
- Security must therefore extend across the entire **technology supply chain**.
  इसीलिए, सुरक्षा पूरे **प्रौद्योगिकी आपूर्ति-तंत्र** में सुनिश्चित होनी चाहिए।
- In a reply to Parliament, the Union Home Ministry reported increasing financial cyber-fraud losses from ₹551 crore in 2021 to ₹2,290 crore in 2022, ₹7,465 crore in 2023, ₹22,848 crore in 2024 and marginally dipping to ₹22,495 crore in 2025.
  संसद में दिए गए एक जवाब में केंद्रीय गृह मंत्रालय ने वित्तीय साइबर धोखाधड़ी से हुए नुकसान में वृद्धि की जानकारी दी: 2021 में ₹551 करोड़, 2022 में ₹2,290 करोड़, 2023 में ₹7,465 करोड़ और 2024 में ₹22,848 करोड़। 2025 में यह मामूली रूप से घटकर ₹22,495 करोड़ रहा।
- As per Reserve Bank of India (RBI) data, in FY2023–24, banks reported 36,075 fraud cases involving ₹13,930 crore.
  भारतीय रिज़र्व बैंक (RBI) के आँकड़ों के अनुसार, वित्त वर्ष 2023-24 में बैंकों ने ₹13,930 करोड़ से जुड़े धोखाधड़ी के 36,075 मामले दर्ज किए।
- Of these, 29,082 cases related to cards or internet banking, which accounted for ₹1,457 crore.
  इनमें से 29,082 मामले कार्ड या इंटरनेट बैंकिंग से जुड़े थे और उनमें ₹1,457 करोड़ शामिल थे।

Actual losses
वास्तविक नुकसान

- However, the central bank data comes with a caveat that the amount involved in reported frauds is not equivalent to actual loss incurred.
  हालाँकि, केंद्रीय बैंक के आँकड़ों के साथ यह सावधानी भी जुड़ी है कि रिपोर्ट की गई धोखाधड़ियों में शामिल राशि वास्तविक नुकसान के बराबर नहीं होती।
- Recoveries may reduce the loss and frauds reported in one financial year may have occurred years earlier.
  रकम की वसूली से नुकसान घट सकता है, और किसी वित्त वर्ष में दर्ज धोखाधड़ी उससे कई साल पहले हुई हो सकती है।
- Notable international historical cases such as Equifax (2017) and Capital One (2019) illustrate the potential financial consequences in terms of settlements and judicial costs.
  Equifax (2017) और Capital One (2019) जैसे चर्चित अंतरराष्ट्रीय मामले समझौते और न्यायिक खर्चों के रूप में होने वाले संभावित वित्तीय परिणामों को दिखाते हैं।
- Even as India's rapid digital transformation has widened and deepened the reach of the banking industry, it has exposed the sector more to cyber risks.
  भारत के तेज़ डिजिटल बदलाव ने बैंकिंग उद्योग की पहुँच और विस्तार बढ़ाया है, लेकिन इससे यह क्षेत्र साइबर जोखिमों के प्रति अधिक खुला भी हुआ है।
- The integrated financial ecosystem — comprising UPI, mobile banking, internet banking and digital lending — has complicated the architecture, so that vulnerabilities at one point can have dire consequences far beyond it.
  UPI, मोबाइल बैंकिंग, इंटरनेट बैंकिंग और डिजिटल ऋण से मिलकर बना एकीकृत वित्तीय तंत्र इस व्यवस्था

को अधिक जटिल बनाता है; इसलिए किसी एक स्थान की कमज़ोरी के बहुत दूर तक गंभीर परिणाम हो सकते हैं।

- The National Payments Corporation of India data suggest that UPI processed around 186 billion transactions during 2024–25, illustrating the scale of digital payments infrastructure.
  नेशनल पेमेंट्स कॉरपोरेशन ऑफ इंडिया के आँकड़ों के अनुसार, UPI ने 2024-25 के दौरान लगभग 186 अरब लेनदेन किए, जो डिजिटल भुगतान ढाँचे के विशाल पैमाने को दर्शाता है।

Indispensable practice
अत्यावश्यक अभ्यास

- This growth makes **cyber hygiene** — the routine practices to keep digital systems, devices and data secure — indispensable for all stakeholders alike: banks, customers, technology vendors, payment intermediaries and regulators.
  इस वृद्धि के कारण **साइबर स्वच्छता**—यानी डिजिटल प्रणालियों, उपकरणों और डेटा को सुरक्षित रखने की नियमित आदतें—सभी संबंधित पक्षों के लिए अनिवार्य हो गई है: बैंक, ग्राहक, प्रौद्योगिकी विक्रेता, भुगतान मध्यस्थ और नियामक।
- In view of this, campaigns have already been strengthened on the need for effective cyber hygiene action at various levels.
  इसे देखते हुए, विभिन्न स्तरों पर प्रभावी साइबर स्वच्छता उपायों की ज़रूरत को लेकर जागरूकता अभियान पहले ही मज़बूत किए गए हैं।
- Individual-level cyber hygiene calls for employing unique, strong passwords or password managers, enabling multifactor authentication, installing software updates and avoiding suspicious links.
  व्यक्तिगत स्तर पर साइबर स्वच्छता के लिए अलग-अलग मज़बूत पासवर्ड या पासवर्ड मैनेजर का इस्तेमाल करना, बहु-कारक प्रमाणीकरण चालू करना, सॉफ़्टवेयर अपडेट इंस्टॉल करना और संदिग्ध लिंक पर क्लिक करने से बचना ज़रूरी है।
- Corporate-level measures suggest embedding security into operations with timely patching, encryption, secure software, phishing simulations, independent penetration testing and regular incident response exercises.
  कंपनी के स्तर पर सुरक्षा को कामकाज में शामिल करने के लिए समय पर सॉफ़्टवेयर पैच लगाना, एन्क्रिप्शन, सुरक्षित सॉफ़्टवेयर, फ़िशिंग अभ्यास, स्वतंत्र पेनेट्रेशन टेस्टिंग और नियमित घटना-प्रतिक्रिया अभ्यास जैसे उपाय अपनाने चाहिए।

And finally...
और अंत में...

- Just as the pace of transactions is important, the integrity of the systems and institutions behind them is integral to the credibility of digital finance.
  लेनदेन की गति जितनी महत्वपूर्ण है, उनके पीछे काम करने वाली प्रणालियों और संस्थाओं की विश्वसनीयता भी **डिजिटल वित्त की साख** के लिए उतनी ही ज़रूरी है।

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