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SCIENCE AND TECHNOLOGY

## INTEGRATED HEALTH APPROACH CAN PREVENT ZONOTIC SPILLOVER EFFECTIVELY.

**CONTEXT:** Nipah virus outbreak in Kozhikode, Kerala, the fourth in five years, raises concerns; no cure, focus on containment and precautions.

**STORY SO FAR:** Kozhikode, Kerala, faces its fourth Nipah virus outbreak in five years, causing concern due to its high mortality rate and absence of a cure. Fruit bats serve as the virus reservoir. The situation mirrors the 2018 outbreak. Strict containment measures, medical observation, and cross-border precautions are in place.

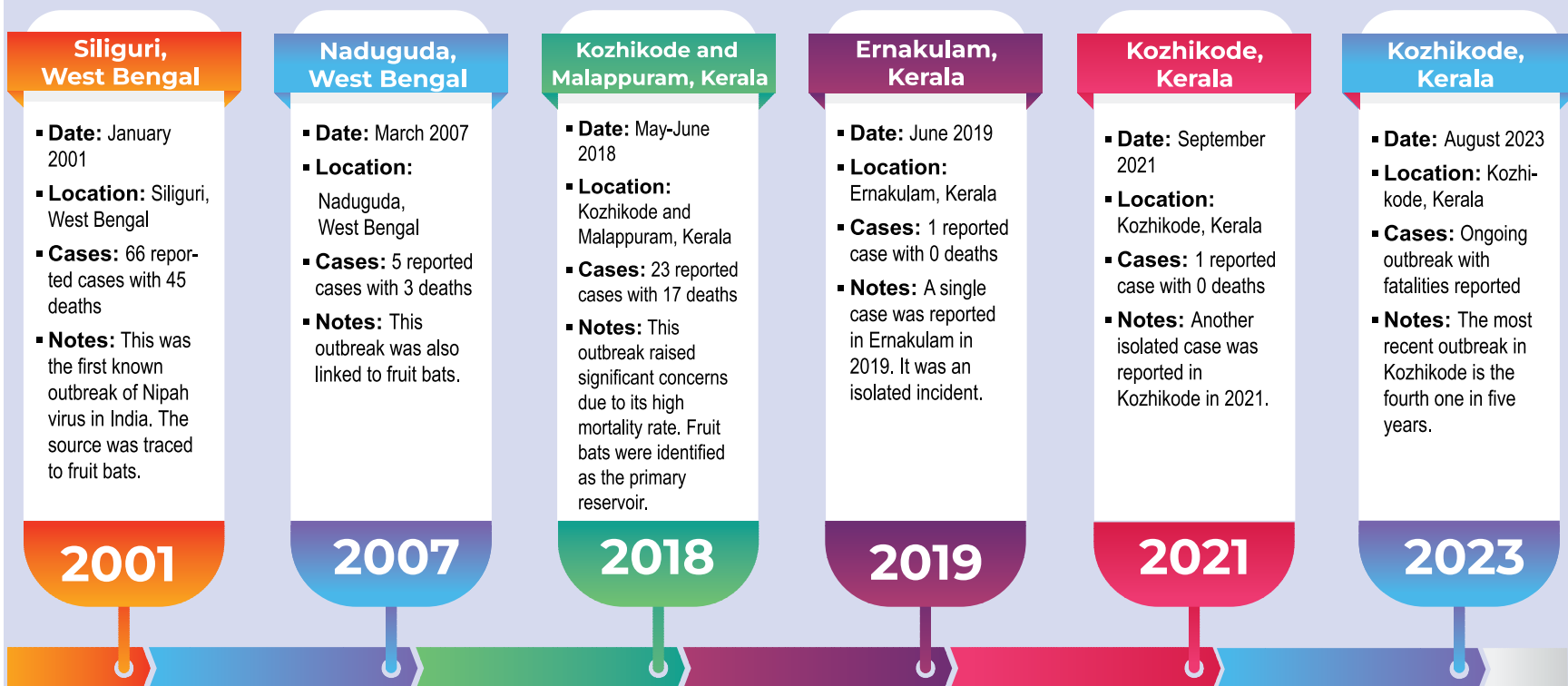
- Past Nipah outbreaks provide protocols but emphasize the need for constant vigilance in managing, isolating, containing, and treating the disease.
- Zoonotic spillovers are linked to human activities, such as agricultural expansion into fruit bat habitats.
- A One Health approach, integrating human, animal, and

environmental health, is crucial to preventing future outbreaks.

- The COVID-19 pandemic highlights the importance of One Health in understanding the interconnectedness of health.
- Governments must prioritize a holistic approach to safeguarding public health by recognizing the interdependence of human, animal, and environmental well-being.

Kerala faces a recurring Nipah virus outbreak, highlighting the need for constant vigilance despite past experiences. Anthropogenic factors, such as agricultural expansion into fruit bat habitats, contribute to zoonotic spillovers. Embracing a One Health approach, recognizing the interdependence of human, animal, and environmental health, is crucial to prevent future outbreaks, as underscored by the COVID-19 pandemic.

### INSTANCE OF NIPAH IN INDIA



**ECOLOGY AND ENVIRONMENT**

# EXAMINING THE GLOBAL STOCKTAKE REPORT'S FINDINGS

**CONTEXT:** The United Nations climate secretariat released a 'synthesis report' on countries' progress toward Paris Agreement goals ahead of the G-20 summit in New Delhi.

**STORY SO FAR:** A 45-page UN report highlights 17 key findings indicating the world is off track to meet Paris Agreement targets. It emphasizes the need for transitioning away from fossil fuels and strengthening efforts. The Delhi Declaration at the G-20 summit recognizes the significant financial requirements for a renewable energy transition.

## 'Global Stocktake' Report

The 'global stocktake' is a key part of the Paris Agreement, occurring every five years to assess countries' progress in reducing greenhouse gases and transitioning to renewables. The first stocktake in 2023 will impact discussions at the 28th UN climate COP in November and may encourage countries to set more ambitious targets before the next NDCs in 2025.

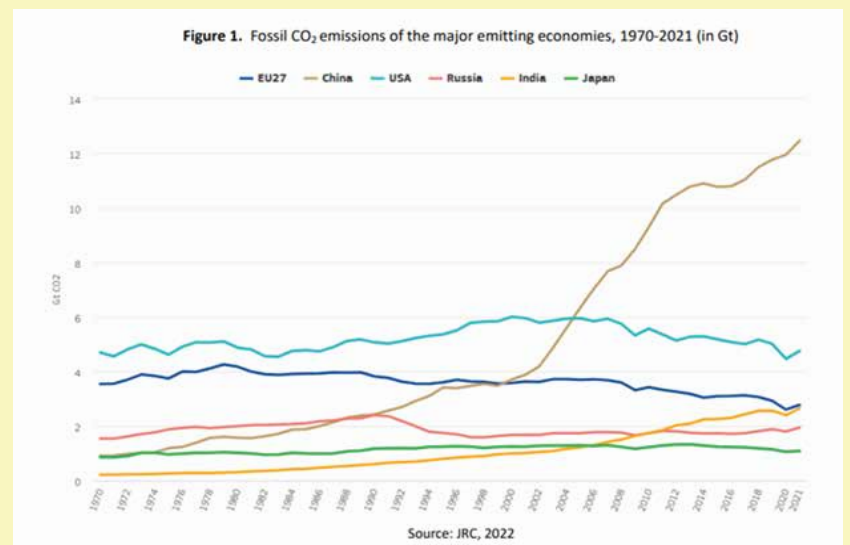
## Major Findings of the Report

- The report, spanning 45 pages, reveals 17 key findings indicating the world's failure to meet Paris Agreement goals.
- Despite minor updates, the report reiterates the insufficiency of countries' NDCs from the 2022 UN synthesis report.
- Current pledges fall far short of required CO2 reductions, leaving a massive emissions gap of 20 billion tonnes.
- The Paris Agreement spurred goal-setting and climate urgency, demanding a transition from fossil fuels while ensuring an equitable economic shift.
- Ambitious emissions reductions of 43% by 2030, 60% by

2035, and global net-zero CO2 by 2050 are imperative.

- Scaling up renewable energy is essential, along with rapid elimination of unabated fossil fuels.
- Halting deforestation, promoting emission-reducing agricultural practices, and equitable global adaptation efforts are crucial.
- Enhanced climate finance access, trillions of dollars, and climate-resilient development support are vital for meeting global climate goals.

The report's influence extends to the G20 Leaders Declaration, recognizing the substantial financial needs, including USD 5.8-5.9 trillion for developing countries pre-2030 and USD 4 trillion annually for clean energy technologies by 2030.



**INTERNAL SECURITY**

# TRANSFER OF PERSONAL DATA UNDER UN TREATY WILL BE UNDER DOMESTIC LAWS: INDIA

**CONTEXT:** India has made suggestions at the international forum that transfer of "personal data" under the convention will be done in accordance with the country's domestic laws and not other applicable international laws.

The Union Home Ministry recently reviewed the draft of the UN Cyber Crime Convention to discuss the necessary changes in the existing systems if this convention is signed and ratified by India. The convention, which has been at the negotiating table for the past three years, is expected to be ratified at the UN General Assembly in 2024.

The Parliament of India enacted the Digital Personal Data Protection Act in August mandating that personal data can be processed "in the interest of sovereignty and integrity of India or security of the state" for "fulfilling any obligation under law". The Act that came into force on August 12 after receiving assent from the President of India requires firms to disclose to users the identity of other firms to which their data would be entrusted for processing, but they are explicitly exempted from disclosing or sharing of such data in the case of lawful interception of data.

At the sixth session of the "Ad Hoc Committee to Elaborate a

Comprehensive International Convention on Countering the Use of Information and Communications Technologies for Criminal Purposes", India asked for the deletion of a clause encouraging state parties to "establish multilateral arrangements" to transfer personal data.

India also agreed to the clause that state parties may transfer personal data to a third country only with the prior written authorisation of the original transferring state party.



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INTERNAL  
SECURITY

## IAF CHIEF TAKES DELIVERY OF FIRST C-295 TRANSPORT AIRCRAFT IN SPAIN

**CONTEXT:** The Indian Air Force on Wednesday received the first C-295MW transport aircraft from Airbus marking a major revamp of its transport fleet. IAF chief Air Chief Marshal V.R. Chaudhari formally received symbolic keys to the first aircraft at the Airbus facility in Seville, Spain. The 56 C-295 aircraft will replace the ageing Avro aircraft.



The C-295, with a carrying capacity of 9 tonnes, can carry up to 71 troops or 50 paratroopers, air-drop cargo, be used for medical evacuation and take off and land on short and unpaved runways. The C-295 aircraft comes in transport configuration, equipped with an Indian electronic warfare suite,

and will replace the Indian Air Force's ageing Avro-748 fleet.

In September 2021, the Defence Ministry signed a ₹22,000-crore deal with Airbus and Space S.A., Spain for procurement of 56 C-295MW transport aircraft to replace the Avro aircraft in service with the IAF. The first 16 C295s of the 56 aircraft on order will be assembled at the San Pablo Sur site in Seville, Spain, with the second aircraft due to be delivered in May 2024 and the next 14 rolled out at a rate of one per month until August 2025.

Production of components for the aircraft to be made in India has already started in the Main Constituent Assembly (MCA) facility in Hyderabad and these parts will be shipped to Vadovara FAL, which is expected to be operational by November 2024. The 56th and final aircraft is expected to be delivered to the IAF by August 2031

### Joint Venture

Under the contract, 16 aircraft will come in fly-away condition from Seville while 40 will be manufactured by Airbus jointly with Tata Advanced Systems Ltd. (TASL). Work is under way to set up the final assembly line (FAL) at Vadodara in Gujarat and the first aircraft manufactured in India will be delivered in September 2026.

Indigenous radar warning receiver and missile approach warning systems made by Bharat Electronics Ltd. (BEL) and counter measure dispensing system made by Bharat Dynamics Ltd. (BDL) have been certified and installed on the first aircraft.

INTERNATIONAL RELATIONS

## INCLUSION OF AU IN G20 A RIGHT STEP

**CONTEXT:** Welcoming the inclusion of the African Union (AU) as a permanent member of the G20, South African presidential spokesperson Vincent Magwenya said it signals an important step to the reforms that the 55-nation bloc has been seeking in global and multilateral institutions including the United Nations Security Council.

He said inclusion of AU in G20 augers very well with respect to how the global financial architecture is shaped as well as how the governance processes are approached. They will be approached now with the inclusion of the African continent, which remains an integral part of the global economy.

Elaborating further on the leadership of the Global South, Mr. Magwenya called for disusing the notion that one country is going to emerge as leader of the Global South and stressed upon the collective efforts similar on the lines of BRICS.

He stressed that what is important is does the Global South have a voice in multilateral platforms that are shaping not only the future, but the global financial architecture, and also going to shape global governance.

INTERNATIONAL RELATIONS

## GOVT. WILL PROTECT INDUSTRY FROM EU'S CARBON LAW: GOYAL

**CONTEXT:** The government will take all necessary steps to protect Indian industry from any adverse impact of the European Union's Carbon Border Adjustment Mechanism (CBAM) which mandates reporting of carbon emissions for certain exports to Europe from October 1.

The CBAM framework involves onerous reporting requirements for cement, iron and steel, aluminium, fertilisers, and electricity imports in the region. Additional import levies would be imposed on such carbon-intensive products from 2026. Indian steel exports to Europe could take the biggest hit from the CBAM due to more carbon-intensive nature of production processes vis-à-vis rivals like China.

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**ECONOMICS AND DEVELOPMENT**

# LITTLE SUCCOUR

**CONTEXT:** The headline Consumer Food Price Index inflation eased slightly in August to 6.83 % calculated on a year-on-year basis. However, food prices from July's 15-month high, provides little assurance that retail inflation has actually begun to come under control.

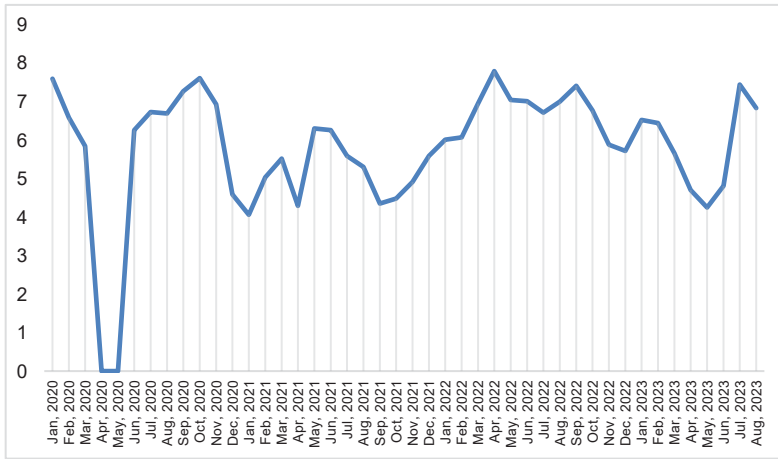


FIGURE: Line chart representation of the Consumer Price Index based inflation.

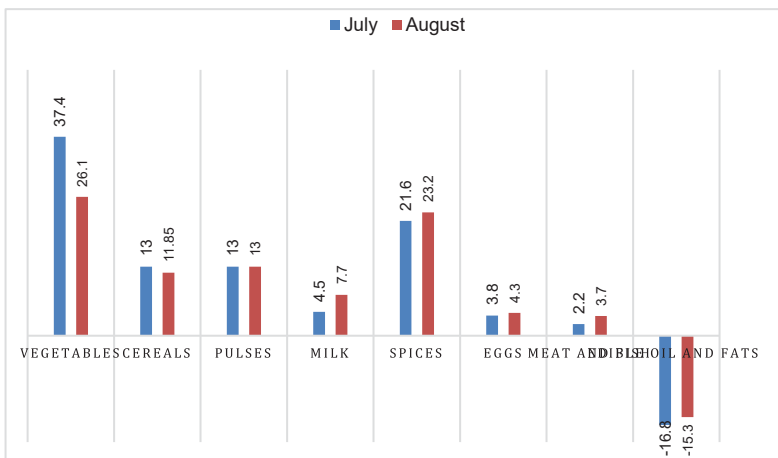


FIGURE: Bar chart representation of the Consumer Price Index based inflation.

Prices of 11 of the 12 items on the food and beverages group of the CPI increased. Oils and fats, the sole item that recorded a year-on-year decline in prices, posted its first sequential increase in nine months. Vegetables prices moderated with tomato prices recording an appreciable month-on-month deflation of 5.88 % in the 19-member basket. Potatoes and onions were among the seven items that continued to log sequential inflation 2.3 % and 12.3 %, respectively. The All-India average retail price of onion on September 13 at ₹ 33.39 / kilogram, 8.7 % higher than ₹ 30.72 on August 19.

As on September 12, the price of India's crude basket climbed 7.2 % from the average in August to \$ 92.65/barrel.

The near-term inflation outlook is also made more uncertain by other factors including a distinct deficit in monsoon rainfall. Besides the overall 10% shortfall, sharp regional and temporal anomalies in rain distribution have impacted either the sowing or the quality of produce of several farm items. Kharif sowing of pulses had, as on September 8, recorded an 8.6 % shortfall compared with the year-earlier period. Urban consumers faced food price inflation of 10.4 %.

The Centre's imposed a 40 % export duty on overseas shipments of the bulb in August till December 31 to arrest the continuing uptrend in onion prices, is yet to make much of a tangible impact.

**POLLITY AND GOVERNANCE**

# A MOCKERY OF PEDAGOGIC ETHICS, THE BREAKING OF A BOND

- A teacher in a private school in Uttar Pradesh made students slap a seven-year-old, and if it was soft, she asked them to hit harder. The school was recognized by the government but is now closed due to the incident. Teacher training in India has issues, and the Right to Education Act's momentum has faded.
- The National Council for Teacher Education (NCTE) has struggled to enforce norms for teacher training. The Supreme Court also criticized the NCTE for allowing Bachelor of Education (BEd) degree holders to teach at the primary level.
- The incident in Muzaffarnagar takes on added significance as the victimized child is Muslim, and some leaders advise against pursuing the case to avoid communal tensions. The teacher does not seem remorseful and believes she was doing her job.

## Chattopadhyaya's effort

- The Teacher Commission report chaired by D.P. Chattopadhyaya emphasized professional conduct for teachers in India but is now largely ignored. The current education system prioritizes practicality over reflection.
- The report advocated for well-read, thoughtful teachers, which had limited impact in India, especially in bureaucracy. In the 1990s, contractual hiring and privatization affected teachers' dignity. Now, a teacher defending corporal punishment is a reminder of human, minority, and child rights in Uttar Pradesh.
- Sadly, there's no unified community of teachers. On Teachers' Day, it's important to recognize the value of teachers' voices in our nation's development, something Dr. Sarvepalli Radhakrishnan would have appreciated.
- By assigning a day for teachers and another one for children, India seems to have forgotten that the two form a bond; no worthwhile education can take place when this bond breaks

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## ECOLOGY AND ENVIRONMENT

## THE COMPLEX PATH TO BIOFUEL SUSTAINABILITY

**CONTEXT:** As electric vehicles gain popularity, there's growing awareness that decarbonisation strategies involve trade-offs, and sustainable biofuels offer advantages.

**BACKGROUND:** As electric vehicles (EVs) become more popular, it's clear that decarbonisation strategies involve trade-offs. Transitioning to EVs requires costly infrastructure changes and mineral imports, while biofuels can be used in existing infrastructure. However, distinguishing between sustainable and unsustainable biofuels is crucial for effective decarbonisation.

### The challenges in India

- India aims for 20% ethanol blending with petrol by 2025, primarily using first-generation ethanol from food crops.
- Growing food crops for ethanol production poses food security risks and may strain limited resources.
- Groundwater depletion and stagnant crop yields require prioritizing food production over fuel.
- The agriculture sector's direct greenhouse gas emissions make increasing them for fuel production counterproductive.
- Promoting sustainable biofuels from crop residues and waste is a more environmentally friendly approach, supported by global cooperation.

### Sustainable biomass use

- Biomass should be prioritized where low-carbon alternatives are limited, like long-haul aviation and road freight.
- Sustainable biofuel production must triple by 2030 to achieve global net-zero emissions by 2050.
- 2G ethanol is a potential sustainable fuel if production is decentralized, but balancing economies of scale and biomass transport is challenging.
- The Global Biofuels Alliance can drive innovation in efficient biomass supply chains and decentralize biofuel production.
- Achieving true sustainability in biofuels requires careful examination within the larger ecosystem to avoid unintended negative consequences.

### Bio-fuels and Bio refineries

- India, during its G20 Presidency, emphasizes international collaboration for energy security and the development of biofuels and hydrogen. It has notified the use of hydrogen as automotive fuel and promotes 2G ethanol production through the JI-VAN Yojana. Oil CPSEs are establishing 2G ethanol bio-refineries in various locations.
- Public Sector Oil Marketing Companies blended 433.6 crore liters of ethanol in petrol in the Ethanol Supply Year 2021-22.
- They also procured 5.83 crore litres of bio-diesel for blending with diesel in the financial year 2022-23.
- Oil and Gas Marketing Companies issued 3694 Letters of Intent for Compressed Bio Gas procurement up to October 31, 2022.

## SCIENCE AND TECHNOLOGY

## KERALA REPORTS 5 NIPAH CASES; 789 CONTACTS MONITORED

**CONTEXT:** Nipah cases increase to 5 in Kerala, with 789 contacts under surveillance; healthcare worker tests positive; tracing travel history; monoclonal antibodies to be used.

**NEWS SO FAR:** In Kozhikode, Kerala, Nipah cases have increased to five, including a healthcare worker, with 789 contacts monitored. The infection is of the less infectious Bangladesh strain but has a 70% mortality rate. The government has restricted large gatherings until September 24.

Monoclonal antibodies for treatment are expected from the Indian Council of Medical Research. Contact tracing continues, with the first patient considered the index case. Chief Minister Pinarayi Vijayan has convened officials to assess the situation, with nine gram panchayats declared containment zones in the district.

### Experts urge government to research Nipah virus's ecological dynamics

- Kerala faces recurring Nipah outbreaks due to Pteropus medius bats, but lacks disease epidemiology investment and preparation.
- Despite four NiV outbreaks, uncertainties remain about how and when the virus spillover occurs and its specific route.
- Research on NiV dynamics in bats, ecological factors, and spillover transmission is essential for understanding and prevention.
- Previous assumptions about seasonality in Nipah outbreaks no longer hold, challenging predictions and preparedness efforts.
- After each outbreak, research takes a back seat, highlighting the need for continuous surveillance and study in Nipah-prone areas.

### Nipah virus

Nipah virus is a zoonotic virus that can cause severe respiratory and neurological illness in humans, with a high mortality rate.

- Origin:** Nipah virus is transmitted from animals to humans and is primarily associated with fruit bats as the natural reservoir.
- Symptoms:** Infected individuals can experience fever, encephalitis, respiratory issues, and severe brain inflammation.
- Transmission:** Human-to-human transmission occurs through close contact with respiratory secretions or contaminated surfaces.
- Outbreaks:** Nipah virus outbreaks have occurred in South and Southeast Asia, leading to significant public health concerns.
- Prevention:** There is no specific treatment for Nipah virus, emphasizing the importance of preventive measures, such as avoiding contact with infected individuals and practicing good hygiene.

Kerala's recurrent Nipah outbreaks underscore the urgent need for sustained research into bat dynamics, ecological factors, and spillover transmission to protect against this deadly zoonotic infection.

## GEOGRAPHY

## PROTECTING FLOODPLAINS IS THE NEED OF THE HOUR (EDITORIAL)

**CONTEXT:** As per the World Health Organization, “Floods are increasing in frequency and intensity, and the frequency and intensity of extreme precipitation is expected to continue to increase due to climate change.”

### Examples of extreme flood events:

Last year, devastating floods in Pakistan claimed 1,700 lives and affected 33 million people.

The 2013 floods in Uttarakhand, the 2014 floods in the Kashmir Valley, the 2015 floods in Chennai, and the 2017 floods in Gujarat all caused loss of lives and livelihoods and massive damage to infrastructure.

This year too, in July we saw the devastating effects of rain-induced floods and landslides in several districts of Himachal Pradesh. The Yamuna water level crossed the 208.5 metre mark, breaking a 45-year-old record.

All these disasters point to the severity of the situation and the urgent need to tackle it.

### India's proneness to floods

As per the Geological Survey of India, **over 40 million hectares, which is nearly 12% of the total land area of India, is prone to floods.**

The severity and frequency of floods has especially affected our cities, where there is little effort made in maintaining natural topography. Cities expand fast and mostly in a haphazard manner, which makes them vulnerable to disasters.

Flooding affects the economy too — Indian cities are projected to contribute to 75% of the GDP by 2030.

### Flood Disaster Management

India primarily relies on the Disaster Management Act, 2005, and the rules made in pursuance of the Act, to deal with flood management. But this law is meant to deal with multi-hazard risks and is not specifically focused on flood risk management.

As per the Act, disasters cannot be predicted. This is not entirely correct, especially with respect to the frequency and intensity of floods.

There is a shift in the strategy of flood control in countries such as Germany, the U.K., and the Netherlands to flood risk management as opposed to flood protection.

While the protection strategy includes technical measures such as the laying of dikes, temporary flood defence walls, and polders, the key elements of the management strategy are retention of water and restoration of floodplains.

### Issues with flood disaster management in India

In India, there are **large-scale encroachments on floodplains.** These increase the frequency of floods and the damage caused by them.

A 2018 report of the Comptroller and Auditor General of India attributed encroachments in the floodplains of the rivers of Tamil Nadu and the failure to act on them as the prime reason for the Chennai floods of 2015. The auditor called the deluge a ‘man-made disaster’.

Illegal construction work in floodplains reduces the capacity of rivers to contain a high level of water within their banks. This is especially the case during heavy rainfall when water flows down from upper catchment areas. Thus, the tendency to occupy floodplains results in flooding.

Uttarakhand has been neglecting eco-sensitive floodplains by allowing the construction of guest houses and hotels on the river front to promote tourism and boost its economy. In the wake of the massive floods in 2013, the National Green Tribunal virtually barred construction of buildings 200 m along the banks of the Ganga, in a 2015 directive. But attempts were made to bypass this.

The Uttaranchal River Valley (Development and Management) Act, 2005, is meant to regulate mining and construction in the river valley. But reports indicate that there is rampant mining and construction activity with little regard for the environment.

Floods are also often brought about by climate change-induced rainfall. This especially impacts mountainous regions such as the Himalayas.

Laws in India which are meant to protect the environment are not implemented. While there are central policy measures to protect floodplains, they are mostly non-binding on States. No State in India has been able to prevent encroachment on floodplains.

### Way Forward

Global experiences point to the potential benefits of protecting and preserving ecosystems such as wetlands, forests, lakes, and coastal areas in reducing physical exposure to natural hazards such as floods, landslides or avalanches by serving as buffers.

In 1996, Germany made a fundamental change to its Federal Water Act in the aftermath of a massive flood. The law provides for protecting original retention capacity while reconstructing bodies of water. Therefore, floodplain restoration and water retention of water bodies are considered to be pillars against flooding.

Climate change adaptation is a cross-sectoral issue. It involves laws relating to land use, preservation of water bodies, coastal regulations, and environmental impact assessment. Thus it is complex; a multitude of laws need to be integrated into a coherent framework.



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**POLITY AND GOVERNANCE**

# WHAT IS THE BATTLE OVER THE 'PLOUGH' SYMBOL IN LADAKH?

**CONTEXT:** The Supreme Court reprimanded the Ladakh administration for delaying the reservation of the 'plough' symbol for National Conference (NC) candidates in LAHDC-K elections. The Ladakh administration failed to follow two High Court orders allowing the NC to use the symbol, suggesting possible deliberate delay.

The NC was denied its symbol because Ladakh's administration argued that symbol reservation must be done by the Election Commission of India (ECI) for Ladakh, not by the UT of Ladakh.

The NC accused the Ladakh Election Authority of bias, citing the allocation of the symbol to the Aam Aadmi Party in a previous election. They argued that recognized State parties can use their symbol in other states or UTs.

This legal battle is influenced by regional politics and the BJP's interests in Ladakh, which opposes reunification and Article 370 restoration, while the NC advocates for these issues if they return to power.

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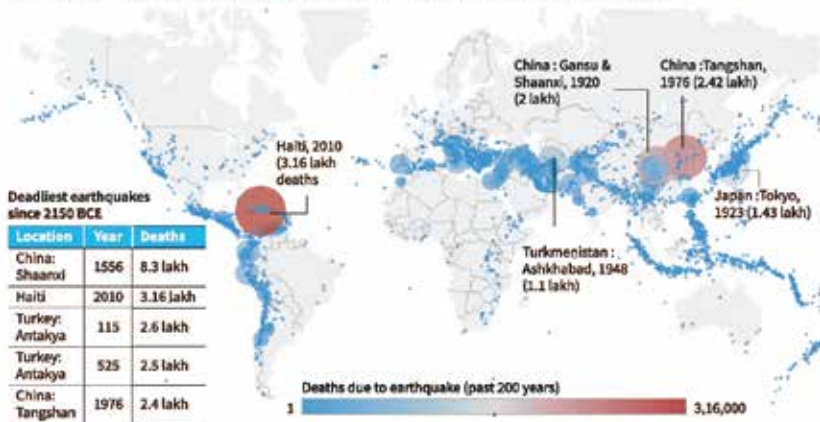
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The more that you learn, the more places you'll go."  
- Dr. Seuss*

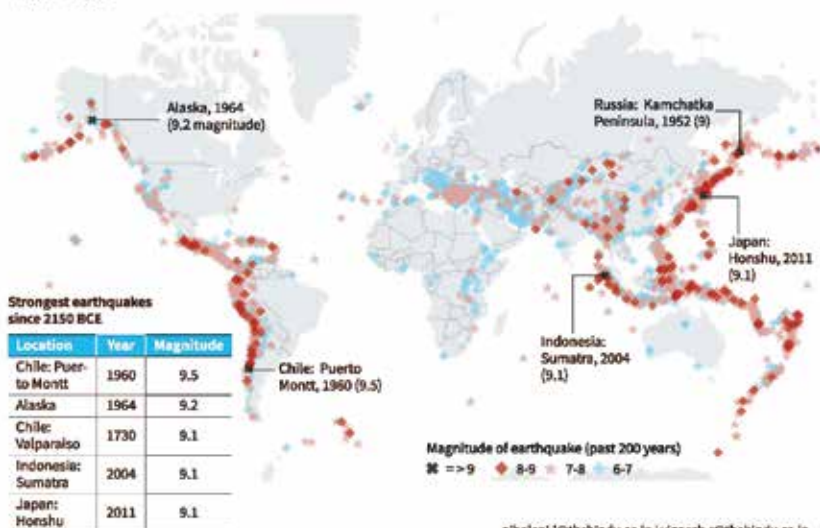
**DISASTER MANAGEMENT**

## THE DEADLIEST AND STRONGEST EARTHQUAKES IN RECORDED HISTORY

**Map 1 |** The map plots the death toll from significant earthquake events in the last 200 years. The bigger the circle, the higher the number of deaths related to those quakes. The earthquakes marked are the deadliest in the past 200 years



**Map 2 |** The map shows the magnitude of earthquake events in the past 200 years. The earthquakes marked are the most severe in the past 200 years



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*Corporate office:*  
**Vedhik IAS Academy**  
Samkalp Bhawan, Plot No.15,  
Sector 4, Rama Krishna Puram,  
New Delhi, Delhi-110022

*Regional office*  
**Vedhik IAS Academy**  
202, Raheja Chambers, 12,  
Museum Road. Bangalore -  
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