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CURRENT AFFAIRS

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SPACE DEBRIS

This article covers "Daily Current Affairs" and the topic details "Space Debris". The topic "Space Debris" has relevance in the "Science and Technology" section of the UPSC CSE exam.

For Prelims:

What is Space Debris?

What is Kessler syndrome?

What is Convention on International Liability for Damage Caused by Space Objects

For Mains:

GS3: Awareness in the fields of Space

Why in the news?

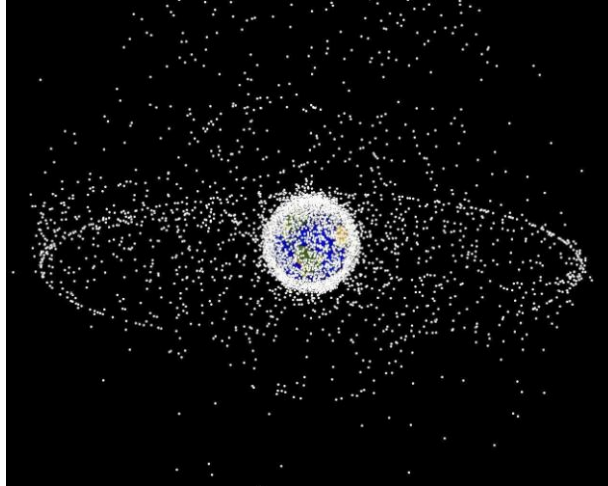
The discovery of a substantial object along the shores of western Australia has been officially identified as the remnants of a rocket belonging to the Indian Space Research Organisation (ISRO).

Space Debris

- Space junk, also known as space debris, encompasses all man-made objects or debris present in space.
- This includes large items like defunct satellites that have either failed or been deliberately left in orbit after completing their missions.
- Additionally, it encompasses smaller fragments such as debris or paint particles that have separated from rockets.

Amount of Space Junk:

- Approximately 2,000 active satellites orbiting Earth.
- Around 3,000 defunct satellites present in space.
- About 34,000 pieces of space junk larger than 10 centimetres.
- Millions of smaller space debris pieces that could pose significant risks upon collision.



How Space Junk Enters Space:

- Space junk originates from objects launched from Earth, remaining in orbit until re-entering the atmosphere.
- Objects in lower orbits (a few hundred kilometres) can re-enter the atmosphere relatively quickly, usually burning up and not reaching the ground.
- Debris or satellites in higher orbits (36,000 kilometres), like those in geostationary orbits for communications and weather satellites, may circle Earth for extended periods, even thousands of years.
- Some space debris is created by collisions or anti-satellite tests in orbit.
- Satellite collisions can generate thousands of new pieces of debris.
- Certain countries, including the USA, China, and India, have performed anti-satellite missile tests, creating additional hazardous debris fragments.

Risks of Space Junk to Space Exploration:

- Currently, space junk does not impose significant risks to space exploration efforts.
- The primary danger is to other satellites in orbit, requiring them to avoid potential collisions to prevent damage or destruction.
- Collision avoidance maneuvers are regularly conducted across all satellites, including the International Space Station (ISS) with astronauts on board.
- Fortunately, collisions are infrequent; the last known satellite collision with space junk occurred in 2009, and a Chinese satellite broke up in March 2021 after a collision.
- For exploration beyond Earth's orbit, the existing limited amount of space junk does not present a problem.

Concerns about Falling Space Junk:

- The threat posed by falling space junk to human life and property is not insignificant.
- When large space debris re-enters Earth's atmosphere and falls into the oceans, it can still pose risks to marine life and ecosystems.
- Falling objects from space may cause harm to marine creatures and disrupt their habitats.

- Additionally, the impact of large objects in water bodies can result in pollution and ecological disturbances.

Cleaning up Space Junk:

- The United Nations urges companies to remove satellites from orbit within 25 years of mission to address space junk, but enforcement is challenging due to satellite failures and other factors.
- Various companies have proposed innovative solutions, such as using harpoons, nets, magnets, and lasers to retrieve dead satellites and direct them to burn up in Earth's atmosphere.
- The RemoveDEBRIS mission demonstrated successful satellite capture with a giant net. The University of Surrey's Surrey Space Centre led the mission, with Surrey Satellite Technology Ltd. (SSTL) manufacturing the satellite's platform. However, these methods are effective for larger satellites but not for smaller debris, which must naturally re-enter Earth's atmosphere.

The Kessler syndrome:

- The Kessler syndrome, proposed by NASA scientist Donald Kessler in 1978, warns that excessive space junk could lead to a chain reaction of collisions, generating more debris and endangering Earth's orbit.
- Experts are concerned about potential variations of this problem, emphasizing the need for precautionary measures to avoid catastrophic consequences.

Convention on International Liability for Damage Caused by Space Objects:

- The Convention on International Liability for Damage Caused by Space Objects complements the Outer Space Treaty, governing countries in space exploration.
- Enacted in 1972, it primarily addresses damage caused by space objects to other space assets and also covers damage caused by falling objects on Earth.
- According to the Convention, the launching country bears "absolute liability" and must provide compensation for any damage caused by its space object to Earth or air flights.
- Affected countries have the right to claim compensation based on the Convention's provisions.
- Compensation amounts are determined by international law and principles of justice and equity, ensuring fairness in resolutions.
- The Convention has been invoked only once when Canada sought compensation from the Soviet Union for a satellite crash, resulting in a 3 million Canadian dollar payment.
- It serves as a crucial legal framework, holding countries accountable for damages caused by their space objects and promoting responsibility and fairness in space exploration.

Amid impressive space exploration progress, space junk is a rising worry. Debris from rockets and old satellites reaching our shores brings risks to both orbital assets and Earth's

ecosystems. While new ways to clean up debris are considered, the Kessler syndrome's threat emphasizes the need for global teamwork and following liability rules. As we explore space more, responsible debris control is vital for safe and sustainable cosmic ventures.

Sources:

**ISRO rocket debris on Australian shore: rules governing space junk | Explained News
- The Indian Express**

Q1. With reference to Space Debris, consider the following statements:

1. Objects in lower orbits re-enter the atmosphere more quickly compared to higher orbits.
2. Collisions or anti-satellite tests can generate additional hazardous debris fragments.
3. Falling space junk doesn't pose risks to marine life or ecosystems when it enters the oceans.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 only
- (d) 1, 2 and 3

Answer: (a)

Q2. Consider the following :

1. The Kessler syndrome warns that excessive space junk could lead to a chain reaction of collisions, generating more debris and endangering Earth's orbit.
2. The RemoveDEBRIS mission was led by the Surrey Space Centre.
3. The RemoveDEBRIS mission used a laser to blast smaller debris in space.

How many of the abovementioned statements are correct ?

- (a) Only one
- (b) Only two
- (c) All three
- (d) None

Answer: (b)

Q3. Explain the concept of "Space Junk" and its components. How does the Convention on International Liability for Damage Caused by Space Objects address space debris issues?

Gaurav Nikumbh

MOB LYNCHING

This article covers "Daily Current Affairs" and the topic details "Mob lynching". The topic "Mob lynching" has relevance in the Security section of the UPSC CSE exam.

For Prelims:

About Mob lynching?

For Mains:

GS 3: Security

Causes of Mob Lynching?

Government Initiatives to Prevent Lynching?

Way Forward?

Why in the news:

The Supreme Court has ordered the automatic registration of FIRs under Section 153A of the Indian Penal Code, which deals with promoting enmity between different groups. Additionally, the Court instructed states to establish a compensation scheme for victims of lynching or mob violence.

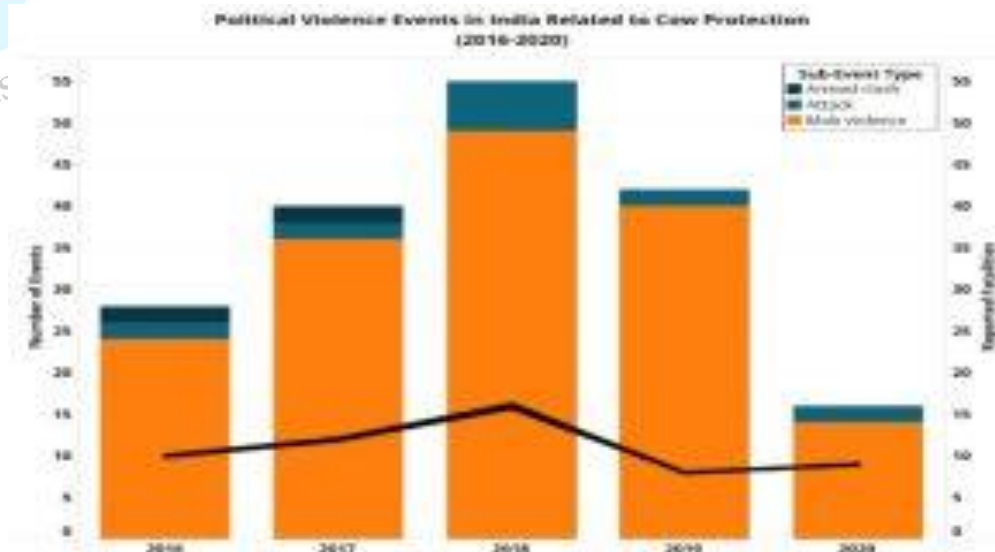
Mob lynching

Mob lynching refers to acts of collective violence carried out by a large group of individuals, targeting a person or property, based on a belief that the victim has committed some perceived wrongdoing. The mob takes the law into their own hands, bypassing legal procedures and disregarding the principles of justice.

Statistics Related to Lynching in India:

Data from 2010 to 2017 compiled by *India Spend* on Cow-Linked Violence in India:

- During the specified period, there were 63 incidents of cow-linked violence resulting in the loss of 28 lives.
- About 97% of these attacks occurred after 2014, showing a significant increase in recent years.
- Around 86% of the victims were Muslims, indicating a specific religious community being targeted.



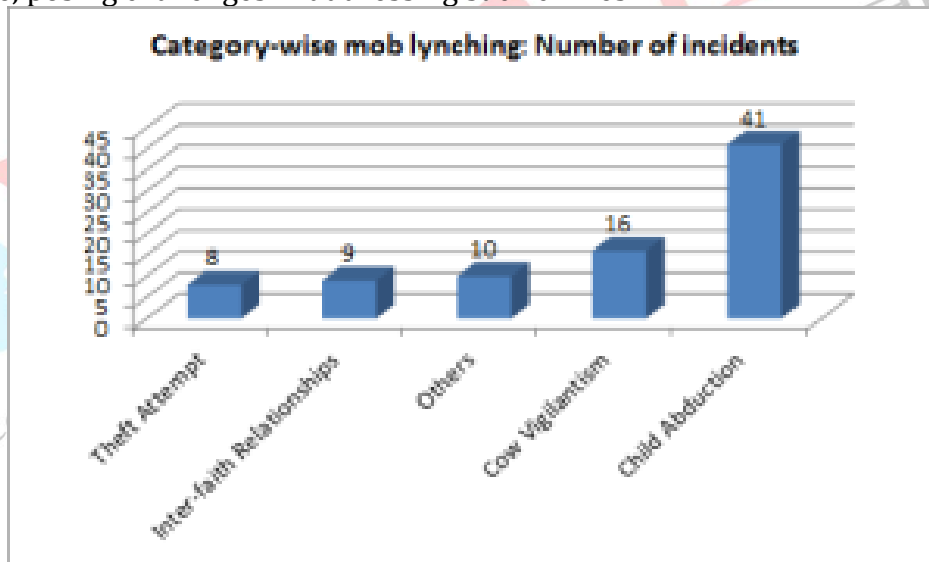
Causes of Mob Lynching:

Various factors contribute to mob lynching incidents:

- **Perceived Threat to Culture or Identity:** Actions or behaviors seen as challenging traditional norms can provoke mob violence.
- **Rumors and Misinformation:** Incidents are often triggered by baseless rumors or misinformation spread through social media and word of mouth.
- **Economic and Social Tensions:** Disputes over resources and economic opportunities may escalate into violent confrontations.
- **Political Interests and Agendas:** Political motivations and interests can incite and fuel mob lynching incidents. Some groups or individuals may use mob violence as a means to further their political agenda or gain support.
- **Moral Vigilantism:** Self-appointed moral vigilantes may enforce their interpretation of social norms through violence.

Issues Related to Mob Lynching:

- **Violation of Human Dignity and Rights:** Mob lynching violates human dignity, infringing upon Article 21 of the Constitution and the principles outlined in the Universal Declaration of Human Rights.
- **Violation of Right to Equality:** Lynching incidents often target specific religious or social groups, violating the right to equality (Articles 14 and 15).
- **Lack of Legal Framework:** Mob lynching is not explicitly classified as murder in the Indian Penal Code, posing challenges in addressing such crimes.



Supreme Court Observation in Tahseen Poonawala Case:

In the case of Tahseen s. Poonawala v. UOI, the Supreme Court characterized mob lynching as a 'horrendous act of mobocracy,' while emphasizing the state's responsibility to safeguard the lives of its citizens.

Supreme Court's Remedial Directions:

The Supreme Court issued seven remedial directions to address mob lynching incidents, including the appointment of a designated nodal officer, immediate lodging of FIRs, personal monitoring of investigations, victim compensation schemes, and disciplinary action against non-compliant officials.

Governments Initiatives:

1. Legislation:

- Manipur, West Bengal, and Rajasthan have enacted laws specifically targeting mob lynching to provide a legal framework for addressing such incidents.
- Jharkhand Assembly has passed the Prevention of Mob Violence and Mob Lynching Bill, 2021, which is currently under review by the Governor.

2. Awareness Campaigns:

- Ranchi Police launched a mass awareness drive in the Ranchi district using poster campaigns to sensitize the public and prevent mob lynching.

3. Victim Compensation:

- The Goa government has introduced a victim compensation scheme, providing Rs. 2 lakh to families in case of a person's death due to mob violence.

4. Social Media Monitoring:

- The police in Hyderabad are actively using social media campaigns, like #HyderabadKillsRumors, to stop the spread of fake news and rumors that can trigger mob violence.

Way Forward:

- **Victim Compensation:** Providing financial support to victims of lynching can aid their families during challenging times.
- **Eradicating Lynchings:** As a democratic society, mob violence has no place, and concerted efforts are needed to eliminate such incidents.
- **Comprehensive Legislation:** States and the central government should work on comprehensive legislation to tackle mob lynching effectively.
- **Combating Fake News:** Measures should be taken to curb the spread of misinformation and hate speech, which often trigger such violence.
- **Community Outreach Programs:** Engaging with communities, especially in areas prone to mob violence, to promote tolerance, inclusivity, and respect for the rule of law.

SOURCE:

<https://www.hindustantimes.com/india-news/sc-seeks-response-from-centre-6-states-on-compensation-for-mob-lynching-victims-101690613519013.html>

Q.1 What are the causes of mob lynching incidents in India?

- (a) Perceived threat to cultural identity
- (b) Economic and social tensions
- (c) Spread of misinformation and rumors
- (d) All of the above

Answer: (d)

Q.2 What is the significance of the "Tahseen Poonawala Case" in the context of mob lynching in India?

- (a) It established guidelines for compensation to victims of mob lynching.
- (b) It highlighted the need for stricter laws against mob violence.
- (c) It emphasized the duty of the state to protect citizens from mobocracy.

(d) It called for the establishment of a separate court for handling lynching cases.

Answer: (c)

Q.3 Analyze the causes of mob lynching and its implications on society and governance. Discuss the initiatives taken by the government to prevent lynching and propose effective strategies to address this issue and promote a safer and more inclusive society.

Rishabh



Yojna IAS
योजना है तो सफलता है