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To The Point

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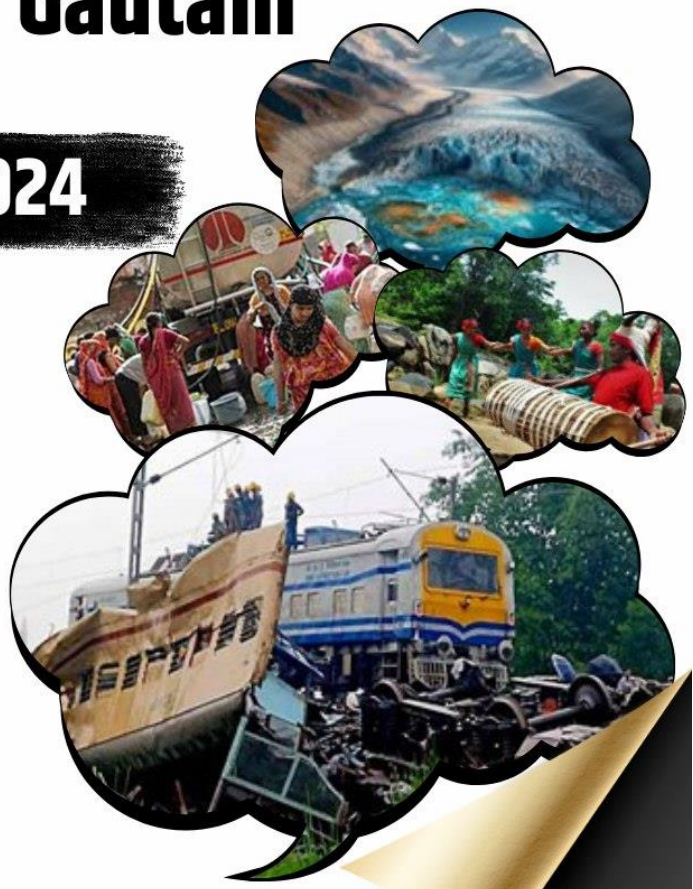


GS Paper 3 – Environment and Ecology

1 New Rules Under Water Act 2024: Penalties and Inquiry Process Simplified

Context: The **Central Government** has notified new rules under the **Water (Prevention and Control of Pollution) Act, 1974**, focusing on streamlining the **inquiry process** and **penalty framework** for water pollution offenses. These rules, titled the **Water (Prevention and Control of Pollution) (Manner of Holding Inquiry and Imposition of Penalty) Rules, 2024**, aim to enhance **regulatory oversight** and ensure a smoother adjudication process for violations.

The Need for Amendments to the Water Act:

Background: **The Water Act, 1974**

The original Act was introduced to **prevent and control water pollution**. It included provisions for **imprisonment** for violations and established penalties for failing to comply with its directives.

Why Amend the Water Act?

- **Simplifying Compliance:** Minor offenses, such as not informing the State Pollution Control Board (SPCB) about water abstraction, carried harsh penalties, including imprisonment. These provisions often led to **harassment** of businesses and individuals.
- **Promoting Ease of Living and Doing Business:** The earlier provisions were **not aligned** with India's **Ease of Living** and **Ease of Doing Business** initiatives.
- **Focus on Reform:** The **Water (Prevention and Control of Pollution) Amendment Bill, 2024**, was introduced to rationalize penalties and **decriminalize minor violations**.

Key Highlights of the Water Act, 2024:

1. **Introduction and Applicability**
   - Initially applicable in **Himachal Pradesh**, **Rajasthan**, and **Union Territories**, with other states adopting the Act through resolutions.
2. **Decriminalization and Revised Penalties**
   - **Imprisonment provisions removed** for minor offenses.
   - **Failure to pay penalties** can lead to imprisonment of up to **three years** or fines up to **twice the penalty amount**.
3. Exemptions for Certain Industries
   - Specific categories of industries may be **exempted** from requiring SPCB consent if deemed non-polluting by the Central Government.
   - Penalties for **tampering with monitoring devices** are set between ₹**10,000 and ₹15 lakh**.
4. Streamlined SPCB Chairman Appointments: The **nomination process** for SPCB chairpersons will now involve **central oversight**, adding transparency and accountability.
5. Enhanced Penalties for Pollutant Discharge
   - Monetary fines replace imprisonment for violations of pollutant discharge norms.
   - **SPCBs empowered** to order the immediate cessation of activities causing pollution.
6. Appointment of Adjudicating Officers
   - **Adjudicating officers** (minimum rank: Joint Secretary) are authorized to assess penalties for violations.
   - Appeals can be made to the **National Green Tribunal (NGT)**, with a deposit of **10% of the penalty amount**.
7. Accountability for Government Departments
   - Heads of government departments are liable to pay penalties equal to **one month's salary** for violations unless they prove **due diligence**.

Key Features of the New Rules Under the Water Act 2024

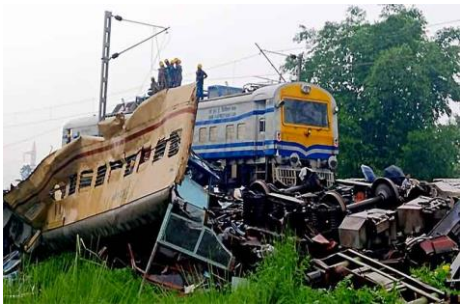
1. Introduction of Penalty Rules
   - The **Union Environment Ministry** has notified procedures for **inquiries** and **penalty imposition**, which are now in effect.
2. **Shift to Civil Penalties**
   - Criminal charges for violations have been replaced by **civil penalties**.
   - Non-polluting industries (e.g., **white category industries**) are exempt from prior permissions under the Act.
3. Empowerment of Pollution Control Authorities: **CPCB**, **SPCB**, Pollution Control Committees, and Integrated Regional Offices can now directly file complaints for violations.
4. **Role of Adjudication Officers**
   - Officers (minimum rank: Joint Secretary) oversee complaints, issue notices, and complete inquiries within **six months**.
   - Alleged violators may respond through **legal representatives**.

Conclusion:

The **Water Act 2024** and its new rules mark a **significant shift** in India's approach to addressing water pollution. By **decriminalizing minor offenses** and introducing **monetary penalties**, the government aims to reduce harassment and encourage compliance. These reforms not only support the **Ease of Doing Business** but also strengthen regulatory mechanisms for safeguarding India's water resources.

GS Paper 3 – Infrastructure

2 Kanchanjunga Express Collision: CRS Report Reveals Safety Gaps



Context: The **Commissioner of Railway Safety (CRS)** has released a detailed report on the **June 2024 Kanchanjunga Express-Goods Train collision** in West Bengal. The report cites **"multiple lapses"** at various operational levels, from station staff to divisional officials, as the primary reasons for the tragic incident.

Labeling the collision as an **"accident-in-waiting,"** the CRS highlighted failures in managing train operations during automatic signal breakdowns. The report recommends the **urgent implementation of the KAVACH system** to prevent similar incidents.

What is the Commissioner of Railway Safety (CRS)?

The **CRS** is a statutory body responsible for ensuring the **safety of railway operations and travel** under the **Railways Act, 1989**.

Key Functions:

- **Investigates Serious Accidents**: Probes train collisions and derailments.
- **Makes Safety Recommendations**: Suggests preventive measures to the government.

Administrative Structure:

- **Headquarters**: Located in **Lucknow, Uttar Pradesh**.
- **Reporting**: The CRS operates under the **Ministry of Civil Aviation (MoCA)**, not the Ministry of Railways, to maintain independence and prevent conflicts of interest.

What is KAVACH?

About the System:

- **KAVACH**, meaning "armour," is India's indigenous **Train Collision Avoidance System (TCAS)** developed since 2012.
- It is designed to ensure **zero accidents** by automatically managing train movements during emergencies.

How It Works:

- **Electronic Devices**: Uses **Radio Frequency Identification (RFID)** devices on trains, signals, and tracks.
- **Communication**: Tracks, locomotives, and signals "communicate" using ultra-high radio frequencies to control brakes and alert drivers of dangers.

Development;

- **Indigenously Designed**: Created by the **Research Design and Standards Organisation (RDSO)** in collaboration with Indian industries.
- **Testing**: Trials conducted by the **South Central Railway**.

The Kanchanjunga Express Collision:

What Happened?

On **June 17, 2024**, the **Sealdah-bound Kanchanjunga Express** collided with a goods train near **New Jalpaiguri station** in West Bengal. The accident occurred within the **Katihar Division of Northeast Frontier Railway (NFR)**.

Casualties and Injuries

- **Deaths**: 10, including the goods train's loco pilot and the Kanchanjunga Express's train manager.
- **Injuries**: 43 passengers suffered various injuries.

CRS Report: Key Findings

Causes of the Accident:

The CRS identified the following lapses as major causes:

- **Flawed Authority Letter**: Issued to pass defective automatic signals, but it lacked proper speed guidance.
- **Communication Failures**: Absence of **walkie-talkies** limited coordination between the train crew and station staff.
- **Operational Negligence**: Station staff and officials failed to follow standard protocols, leading to errors in train working.

Communication and Safety Violations

- The flawed authority letter misled the **loco pilot** into maintaining full speed despite defective signals.
- Key staff, including the **train manager**, were unaware of the signal issue due to improper documentation.

Systemic Issues in Signal Management

- **Repeated Failures**: Katihar Division recorded **275 automatic signal failures** since January 2023.
- **Accident History**: Over five years, **208 dangerous signal-passing incidents** were reported, with 12 leading to collisions.

CRS Recommendations:

1. Implement KAVACH System

The report strongly advocates for the **nationwide implementation** of the KAVACH system to prevent future accidents.

2. Crashworthiness in Coaches

- Prioritize crash-resistant features in the **last two coaches** of passenger trains.
- Retrofit older coaches with enhanced safety measures during major servicing.

3. Install Crew Monitoring Systems

Accelerate the installation of **Crew Voice and Video Recording Systems (CVVRS)** in locomotives to improve communication and safety compliance.

Ministry of Railways' Response:

Disciplinary Actions:

The Ministry has initiated **disciplinary proceedings** against staff found responsible for the collision, including station masters and inspectors.

Revised Safety Rules

- **Amendments to Procedures**: General and Subsidiary Rules (G&SR) have been updated to prevent ambiguities in handling signal failures.
- **Updated Formats**: New formats for books and forms related to automatic block sections ensure clear instructions.

Equipment and Communication Upgrades:

- **Walkie-Talkies Procured**: All defective communication devices in Northeast Frontier Railway have been replaced.
- **Enhanced Staff Training**: Comprehensive training for loco pilots, train managers, and station masters has been conducted to improve adherence to protocols.

Conclusion:

The **Kanchanjunga Express collision** underscores the critical need for robust safety mechanisms and better operational practices. The CRS report highlights systemic lapses while offering a roadmap for improvement. By implementing **KAVACH** and reinforcing communication protocols, the Ministry of Railways can move closer to achieving **zero-accident rail operations** in India.

GS Paper 3 – Environment and Disaster Management

3 Expanding Himalayan Glacial Lakes: A Looming Threat

Context: A recent report by the **Central Water Commission (CWC)** reveals that **Himalayan glacial lakes** are expanding at an alarming rate, posing significant risks to communities, ecosystems, and infrastructure.

Key Findings of the Report:

- The total **glacial lake inventory area in India** grew from **1,962 hectares in 2011 to 2,623 hectares in 2024**, marking a **33.7% increase**.
- **67 lakes in India** showed a surface area increase of over **40%**, placing them in the **high-risk category** for **Glacial Lake Outburst Floods (GLOFs)**.
- Regions like **Ladakh, Himachal Pradesh, Uttarakhand, Sikkim, and Arunachal Pradesh** experienced the most pronounced expansions, indicating **heightened risks of GLOFs**.
- Across the Himalayan region, glacial lakes and other water bodies have seen an **overall area increase of 10.81%** in 2024.
- Expanding glacial lakes in **Bhutan, Nepal, and China** pose significant **transboundary risks** to India.

What Are Glacial Lakes?

Glacial lakes are **water bodies formed by melting glaciers**. These lakes usually develop at the **foot of glaciers** but may also form on, in, or under them.

Types of Glacial Lakes

1. **Ice-Contact Lakes**: Directly connected to glacier ice, terminating in lake water.
2. **Distal Lakes**: Located away from glaciers but influenced by their presence.

Understanding Glacial Lake Outbursts:

As glacial lakes expand, they become increasingly hazardous due to their **unstable boundaries**, often composed of loose ice or sediment.

When these natural dams break, they unleash **massive floods**, known as **Glacial Lake Outburst Floods (GLOFs)**, causing severe destruction downstream.

Historical Incident

In **2013**, Uttarakhand's **Kedarnath flash floods** combined with a GLOF from **Chorabari Tal** killed thousands and caused widespread devastation.

Causes of Glacial Lake Outbursts:

1. **Rising Temperatures**: Accelerated glacier melting in the Himalayas leads to the formation and expansion of glacial lakes.
2. **Increased Glacier Instability**: Melting glaciers destabilize **moraines** (rock ridges) that act as natural dams.
3. **Heavy Monsoon Rains**:Intense rainfall during the **Indian monsoon** increases lake volumes, raising the risk of overflow.
4. **Earthquakes and Landslides**: The **seismically active Himalayan region** often experiences landslides or rockfalls that destabilize glacial lakes.
5. **Development Projects**: Infrastructure projects, such as roads and dams, increase environmental stress and the likelihood of landslides.
6. **Lack of Monitoring**: Many remote glacial lakes are not regularly monitored, leaving communities unprepared for potential disasters.

Consequences of GLOFs in India:

1. **Severe Flooding**: Floodwaters can **destroy villages, farmlands, and infrastructure** downstream.
2. **Erosion and Riverbank Damage**: Sudden surges of water erode riverbanks, destabilizing surrounding land and structures.
3. **Loss of Lives and Livelihoods**: Communities in flood-prone regions face dire risks, with limited resources to recover from disasters.

4. **Infrastructure Damage**: Key assets like **roads, bridges, and hydropower plants** are often washed away during GLOFs.

Preventive Measures Taken:

High-Risk Lakes Identified:

The **National Disaster Management Authority (NDMA)** has listed **189 high-risk glacial lakes** for mitigation measures.

Lake-Lowering Measures

Specialized teams conduct investigations and implement **lake-lowering techniques** to reduce overflow risks.

National GLOF Risk Mitigation Programme (NGRMP)

This program focuses on:

- **Hazard Assessments**: Conducting detailed technical evaluations of glacial lakes.
- **Monitoring Systems**: Installing **automated weather and water level stations (AWWS)** and **early warning systems (EWS)** to detect potential outbursts.
- **Expeditions**: So far, **15 expeditions** have been conducted, covering regions like **Ladakh, Sikkim, Himachal Pradesh, Jammu, and Kashmir**.

Conclusion:

The rapid expansion of **Himalayan glacial lakes** demands immediate attention. **Proactive monitoring**, enhanced infrastructure resilience, and community preparedness are critical to mitigating the risks posed by **GLOFs**. With climate change accelerating glacier melt, long-term solutions like the **National GLOF Risk Mitigation Programme** hold the key to safeguarding lives, ecosystems, and economies in vulnerable regions.

GS Paper 3 – Science and Technology

4 World Intellectual Property Report 2024: India Shines in Global IP Rankings

Context: According to the **World Intellectual Property Organization (WIPO) 2024 Report**, **India has secured a spot among the top 10 countries** for **patents, trademarks, and industrial designs**, showcasing its growing focus on innovation and intellectual property.

Key Highlights of the Report

1. Patents

- India saw a remarkable **15.7% growth in patent applications in 2023**, the fastest among the top 20 global IP economies.

2. Industrial Designs

- Applications for **industrial designs rose by 36.4%**, highlighting India's emphasis on creativity and advancements in the **manufacturing sector**.

3. Trademarks

- India ranked **4th globally in trademark filings**, recording a **6.1% increase** in applications in 2023.

4. Global IP Trends

- A total of **3.55 million patent applications** were filed worldwide in 2023, marking a **2.7% increase** compared to 2022.
- **Asia emerged as a key driver** of this growth, with India, China, the United States, Japan, and South Korea leading the way.

Understanding Intellectual Property (IP):

Intellectual Property (IP) refers to the **creations of the human mind**—inventions, literary and artistic works, designs, symbols, names, and images used in commerce. IP is protected by laws that grant inventors and creators **exclusive rights** over their work, enabling them to gain recognition or financial benefit.

Types of Intellectual Property

- **Patents**: Exclusive rights granted for inventions, covering new methods or technical solutions.
- **Copyrights**: Legal protection for creators of literary, artistic, and musical works.
- **Trademarks**: Unique signs or symbols that distinguish the goods or services of a company.
- **Industrial Designs**: Protection for the aesthetic or ornamental features of an article.
- **Geographical Indications (GIs)**: Signs used for products originating from a specific region, attributed to unique qualities of that location.
- **Trade Secrets**: Protection for confidential information that has commercial value.

India's Key IP Initiatives:

1. National IPR Policy (2016): A comprehensive vision document to integrate all forms of IP, ensuring a framework for **implementation, monitoring, and review** of IP laws.
2. Cell for IPR Promotion and Management (CIPAM): Established to coordinate the implementation of the **National IPR Policy**, promoting awareness and enforcement of IP laws.
3. National Intellectual Property Awareness Mission (NIPAM): A flagship initiative to impart **IP education and training** in schools, colleges, and research institutions.
4. Scheme for Facilitating Startups Intellectual Property Protection (SIPP): A program to **encourage innovation** and support startups in protecting and managing their **IP assets**.
5. Atal Innovation Mission (AIM): Launched by **NITI Aayog in 2016**, AIM promotes a culture of **innovation and entrepreneurship** through programs such as:
    - **Atal Tinkering Labs** for nurturing creativity in schools.
    - **Atal Incubation Centers** for startup support.
    - **Atal New India Challenges** to address social issues through innovation.
    - **Mentor India** for guidance to budding innovators.

Concluding Remarks:

India's **stellar growth in intellectual property filings**, especially in **patents, industrial designs, and trademarks**, reflects its commitment to innovation and global competitiveness. These advancements bolster India's aspirations for **economic growth** and an **innovation-driven future**, positioning the nation as a significant player in the global IP landscape.

GS Paper 2 – International Relations

5 HAWK Air Defense Equipment

Context: Taiwan's **Defense Minister** recently stated that the decision regarding **Taiwan's decommissioned HAWK anti-aircraft missiles** lies with the **United States**, reflecting the ongoing strategic importance of this iconic defense system.

What is the HAWK Missile System?

The **HAWK (Homing All the Way Killer)** is a **ground-to-air missile system** designed to provide effective air defense under a variety of conditions. Initially developed by the **American defense company Raytheon**, it has served as a reliable tool for countering aerial threats.

Key Features:

- **All-Weather Capability**: Designed to operate in diverse weather conditions.
- **Altitude Range**: Effective for **low-to-medium-altitude targets**.
- **Versatility**: Initially created to destroy aircraft, it was later upgraded to intercept other missiles mid-flight.

Development and Operational History:

- **Origin**: The missile entered service in **1960** and underwent continuous upgrades to stay relevant.
- **Modernization**: Extensive updates prevented it from becoming obsolete, but by **1994**, it was replaced by the **MIM-104 Patriot** in the **U.S. Army**.
- **Decommissioning in the U.S.**:
  - Phased out of U.S. service by **2002**.
  - Replaced by the **man-portable FIM-92 Stinger** for the U.S. Marine Corps.
- **Global Use**: The HAWK missile has been **exported widely** and remains in use by **NATO allies** and countries across **Asia** and the **Middle East**.

Technical Specifications:

Guidance System:

The HAWK uses a **Semi-Active Radar Homing (SARH)** system, relying on external radar to guide it toward its target.

Launch and Propulsion:

- **Launcher**: The missile is transported and launched using the **M192 towed triple-missile launcher**.
- **Propulsion**: Powered by a **dual-thrust motor**, it features both a boost and sustain phase for optimized performance.

Key Capabilities:

- **Engages Multiple Targets**: Can simultaneously intercept several threats.
- **Weather Flexibility**: Performs efficiently in a variety of weather conditions.

Legacy and Limitations:

The **HAWK missile system**, while once cutting-edge, is now considered **outdated** compared to modern systems like the **Patriot missile defense system**. However, its **legacy of reliability** and **global adoption** underline its historical significance in air defense technology.

GS Paper 2 – Governance, Constitution, Polity, Social Justice

6 The Gutti Koya Tribals: A Glimpse into their Society and Culture

Context: The **National Commission for Scheduled Tribes** has recently directed the **Union Home Ministry** and the states of **Chhattisgarh**, **Maharashtra**, **Andhra Pradesh**, and **Odisha** to submit a comprehensive report on the **Gutti Koya tribals** and their current status, reflecting growing interest in their community.

Who Are the Gutti Koya Tribes?

The **Gutti Koya** are a unique and **diverse tribal community** that stands out as one of the **few multi-racial and multi-lingual** groups in India. Their population is primarily concentrated in the states of **Telangana**, **Andhra Pradesh**, **Chhattisgarh**, and **Odisha**.

Language

The Koya speak the **Koya language**, which belongs to the **Dravidian language family**. It has close ties to the **Gondi** language and has been significantly influenced by **Telugu** over time.

Occupation and Livelihood:

- The Koya are primarily engaged in the **Podu** system of **shifting cultivation**, a practice historically relied upon for economic survival in forested regions.
- Additionally, they earn their livelihood through **animal husbandry** and collecting **minor forest produce**, which forms an essential part of their daily sustenance.

Cultural Heritage and Festivals:

Sammakka Saralamma Jatra

One of the most significant cultural events for the Koya people is the **Sammakka Saralamma Jatra**. This **biennial festival**, held on the **full moon day of Magha Masam** (January or February), takes place at **Medaram village**, located in the **Mulug taluk** of **Warangal district**, where thousands gather to celebrate their traditions and honor their deities.

Social Structure and Family Life:

The Koya society is organized into five main **sub-divisions** known as **gotrams**, and every Koya is born into one of these clans. **Clan affiliation** is crucial, and individuals remain within their gotram throughout their lives.

Family Structure:

- The Koya people follow a **patrilineal** and **patrilocal** family structure, where lineage is traced through the father, and the family unit is typically centered around the **nuclear family** or **Kutum**.
- **Monogamy** is the norm within Koya society, where individuals are expected to maintain single-marriage relationships.

Political and Social Recognition:

While the **Koya tribe** holds **Scheduled Tribe (ST) status** in **Chhattisgarh**, they are yet to be granted the same recognition in some other regions, like **Telangana**, where they have migrated. This disparity in **ST status** has been a longstanding issue for the community.

Conclusion:

The **Gutti Koya tribals** embody a rich tapestry of **cultural traditions** and **linguistic diversity**, with their practices, festivals, and social structure deeply rooted in history. As they continue to navigate the challenges of modernity and government recognition, their unique heritage remains a testament to the **resilience** and **richness** of India's tribal communities.