

P2. NATIONAL



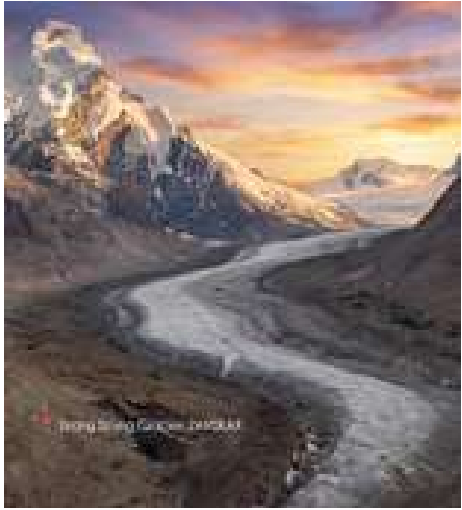
Candidates trained under government’s rural skilling programme not getting jobs - Recent concerns over placement quality, retention, wages and fund utilisation highlight the need to focus on durable livelihood outcomes rather than training or initial placement alone.

P3. NATIONAL



AI-powered cameras to trigger alerts if railway level crossing gates remain open - Indian Railways is deploying AI-powered, solar-powered CCTV surveillance at non-interlocked level crossings to provide real-time verification of gate closure.

P4. ECOLOGY



Ladakh’s giant ‘rivers of ice’ are slowing as the mountains warm - Personality cults can weaken democratic citizenship by replacing institutional accountability, scepticism and participation with political devotion making the health of a republic increasingly dependent on individual leaders rather than durable democratic institutions.

P7. WORLD



India–China Border Management: Peace, Territorial Assertions and Bilateral Relations - The Colombia earthquake highlights how major seismic events can trigger casualties, structural collapse, aftershock risks and infrastructure disruption, requiring coordinated search-and-rescue, emergency funding and recovery support.

Editor’s Note

A new day brings a fresh edition of Pala Civil Times, featuring key developments and issues shaping the national discourse and relevant to UPSC preparation. We begin with concerns over the low placement rates among rural youth trained under skill-development programmes, raising important questions about the effectiveness of targeted welfare and livelihood initiatives. We also examine the use of AI-powered surveillance cameras at railway level crossings and their potential to strengthen safety and reduce operational risks. In our Decoded Editorials, we explore recruitment to public services, focusing on the challenges surrounding transparency, credibility and employment opportunities. The second looks at the Tribunal Reforms Bill, 2026 and the concerns surrounding the institutional independence of tribunals. The World Page turns to India-China relations, examining recent developments along the LAC, concerns over border stability and the continuing tensions surrounding Arunachal Pradesh. On the Ecology Page, we examine the changing dynamics of glaciers in Ladakh's Zaskar region, with particular attention to glacier slowdown, thinning and their implications for the Indus basin and long-term water security. Each topic has been carefully researched, analysed and presented with a focus on conceptual clarity, current relevance and UPSC-oriented understanding. Happy learning!

Editorials Decoded

THE HINDU

In the way



Tribunal effectiveness depends on specialised adjudication combined with institutional independence, secure tenure, judicial primacy and continuing High Court judicial review.



When tear gas clears, what remains in Ranchi



Credible civil service recruitment is essential for merit-based administration, public trust and state capacity, while wider employment opportunities are necessary to reduce excessive dependence on government jobs.

Candidates trained under government's rural skilling programme not getting jobs

Rural livelihood promotion requires more than providing training because sustainable employment depends on access to jobs, entrepreneurship opportunities, credit and continued support. The Deen Dayal Upadhyaya Grameen Kaushalya Yojana (DDU-GKY), Rural Self Employment Training Institutes (RSETIs) and Deendayal Antyodaya Yojana-National Rural Livelihoods Mission (DAY-NRLM) address different dimensions of this challenge. Recent concerns over low wages, weak placement outcomes and under-utilisation of funds underline the need to assess these programmes through sustained employment and livelihood outcomes rather than training or initial placement alone.

Key Rural Livelihood Programmes

DDU-GKY: Launched in 2014 under NRLM to diversify rural incomes and address career aspirations of rural youth through skill training and employment.

RSETIs: Bank-managed institutions provide skill training and upgradation to rural BPL youth, followed by credit linkage for entrepreneurial ventures.

DAY-NRLM: Provides a broader rural livelihood framework alongside employment and skilling interventions.

Employment Pathways: DDU-GKY primarily supports wage employment, while RSETIs emphasise self-employment and enterprise creation.

Institutional Support: Banks, governments and implementing agencies support training, credit linkage and livelihood promotion.

Present Status and Developments

DDU-GKY Outcomes: By March 2026, 18.38 lakh rural youth had been trained and 11.94 lakh placed, including 576 foreign placements.

Coverage: DDU-GKY covers 37 sectors and 816 trades. Within this, *women constitute nearly half of those trained and placed.*

Placement Quality: Concerns include low wages, inadequate support and weak retention after initial placement.

RSETI Outcomes: Since 2009, 61.45 lakh people have been trained and 44.9 lakh settled in enterprises, with credit linkage for over 23.5 lakh beneficiaries.

Fund Utilisation: Unspent allocations and implementation delays affected DDU-GKY, DAY-NRLM and RSETIs during 2021-26.

Significance of rural skill development

Rural Employment: Skill-based employment can diversify income opportunities for rural households.

Entrepreneurship: RSETIs connect training with credit and enterprise creation, enabling self-employment.

Women's Participation: Significant female participation in DDU-GKY and RSETIs supports greater inclusion in livelihood opportunities.

Reduced Distress: Better employment and livelihood opportunities can reduce dependence on distress-driven migration.

Livelihood Security: Combining skills, employment, entrepreneurship and financial linkages can create more sustainable rural income opportunities.



Way Forward

The effectiveness of rural livelihood programmes should be measured by durable employment, adequate wages, enterprise survival and beneficiary retention rather than training numbers alone. Stronger industry linkages, localised placement drives, post-placement support, mentorship, skill upgradation and credit facilitation can improve outcomes. Better fund utilisation and assessment of implementing agencies based on sustained livelihoods can further strengthen the impact of rural skilling and employment programmes.

PYQ Compass

UPSC questions previously asked from the themes discussed on this page.



PYQ
COMPASS

Q. Skill development programmes have succeeded in increasing human resources supply to various sectors. In the context of the statement analyse the linkages between education, skill and employment. (GS II – 2023)

Railways to deploy AI-based cameras at level crossing gates

Indian Railways is deploying AI-powered surveillance cameras to verify closure in real time and generate alerts when gates remain open.

Operational Mechanism

Operational Process: At non-interlocked crossings, the gateman locks the gate after a train is cleared and confirms closure to the Station Master.

AI Surveillance: Solar-powered cameras provide live feeds to the Station Master and engineering control room and generate alerts if the gate remains open or is not closed within the required time.

Recent Developments

Cuddalore Accident: The initiative followed the July 8, 2025 accident in Cuddalore where a train hit a school van, killing three children and injuring two.

Operational Failure: The gate was allegedly left open despite the gateman informing the Station Master that it was closed.

Significance of AI cameras in traffic control

Verification: Live surveillance provides direct verification of gate closure.

Early Warning: Automated alerts can identify gates that remain open beyond the required time.

Safety: Real-time monitoring adds a safety layer against human error and operational failures.

Significance of AI cameras in traffic control

System Reliability: Cameras and alert systems must remain functional and properly maintained.

Response: Alerts must be supported by quick action from railway personnel.

Integration: Technology should complement existing safety procedures, human supervision and reliable communication.

Centre relaxes construction hurdles in Ganga floodplain

The Ganga floodplain is important for flood management, groundwater recharge and protection of the river ecosystem. An August 10, 2026 amendment to the River Ganga (Rejuvenation, Protection and Management) Authorities Order, 2016 has changed the regulatory approach to construction by replacing the earlier blanket prohibition with zone-based regulation linked to flood frequency.

Floodplain Regulation Framework

Earlier Definition: The floodplain covered areas inundated by the greatest flow or a flood occurring once in 100 years.

Construction Ban: The 2016 order declared the Ganga bank and floodplain a construction-free zone and separately prohibited construction in the active floodplain.

Active Floodplain: The zone immediately along the river channel that floods at least once every five years.

Regulatory and Warning Zones: The regulatory zone faces flooding every 5–25 years, while the outer warning zone floods during severe 25–100 year events.

Regulated Construction: Construction beyond the five-year flood line is permitted in regulatory and warning zones subject to official clearances.

Recent Development and Context

August 2026 Amendment: The NMCG removed the clause that expressly prohibited construction across the Ganga floodplain.

Stratified Regulation: Construction restrictions are now concentrated on the active floodplain, while other zones follow an approval-based system.

Policy Context: The change follows petitions before the National Green Tribunal concerning construction along the Ganga and its tributaries.

Government Position: The amendments are presented as correcting an inconsistency rather than diluting standards.

Exceptions: Temporary structures for religious events may be permitted even within the active floodplain.

This episode reiterates the principle that Zone-based permissions should remain aligned with flood risk, environmental protection and effective regulatory oversight.

PYQ Compass

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Q. With reference to the Himalayan rivers joining the Ganga downstream of Prayagraj from West to East, which one of the following sequences is correct? (2024)

- Ghaghara – Gomati – Gandak – Kosi
- Gomati – Ghaghara – Gandak – Kosi
- Ghaghara – Gomati – Kosi – Gandak
- Gomati – Ghaghara – Kosi – Gandak

RELEVANCE

GS III: Infrastructure, Science and Technology, Disaster and Risk Management

ECOLOGY

Ladakh's giant 'rivers of ice' are slowing as the mountains warm

A study of 12 glaciers in the Zaskar Himalaya found that their movement slowed between 1992 and 2023 alongside increasing glacier thinning. The findings provide insights into how climate change is altering glacier dynamics and the future availability of glacier-derived water in the Indus basin.

Glacier Flow and Its Drivers

Ice Movement: Glaciers transport ice from high accumulation zones towards lower elevations.

Thinning: Sustained ice loss reduces glacier thickness and the driving force behind ice movement.

Slowdown: Lower driving force causes glaciers to flow more slowly and reduces ice transfer to lower areas.

Local Factors: Glacier geometry, debris cover and conditions at the terminus can influence flow speed.

Climate Setting: Zaskar glaciers receive most snowfall from mid-latitude westerly disturbances during winter.

Recent Study Findings

Study Period: Researchers examined surface velocity changes across 12 Zaskar glaciers from 1992 to 2023 using satellite data.

Glacier Slowdown: Glacier velocity declined by an average of 2.4 m/year per decade.

Accelerated Thinning: Surface thinning increased from about 0.22 m/year during 2000–05 to 0.57 m/year during 2015–20.

Variable Response: Glaciers did not respond uniformly to warming because local characteristics influence their behaviour.

Evidence: The study links glacier mass loss, thinning and reduced ice flow to explain changes in glacier dynamics.

Significance of Glaciers

Water Storage: Zaskar glaciers act as freshwater reservoirs and release meltwater during warmer months.

Indus Basin: Glacier melt contributes to river flows during dry summer months, supporting water availability downstream.

Peak Water: Increased melting may temporarily raise runoff before declining ice storage reduces future meltwater contributions.

Water Security: Continued thinning and slowdown could affect agriculture, hydropower and downstream ecosystems over coming decades.

Climate Indicator: Changes in glacier velocity provide an indicator of internal glacier responses to environmental change.

Concerns raised by the study

Limited Coverage: The study examined 12 glaciers, while the Zaskar basin has around 1,755 glaciers, limiting wider generalisation.

Measurement Limits: Satellite velocity data cannot directly capture processes beneath glaciers such as subglacial hydrology and basal sliding.

Data Gaps: Long-term field measurements of ice thickness, mass balance and bed conditions remain limited.

Monitoring: Ground observations of thickness, mass balance, ice temperature and meltwater discharge are needed to validate satellite data.



Way Forward

Continuous high-altitude weather observations and long-term monitoring can improve glacier models and climate assessments.

PYQ Compass

UPSC questions previously asked from the themes discussed on this page.



Q. Siachen Glacier is situated to the: (2020)

- East of Aksai Chin
- East of Leh
- North of Gilgit
- North of Nubra Valley

Q. With reference to the water on the planet Earth, consider the following statements: (2021)

- The amount of water in the rivers and lakes is more than the amount of groundwater.
 - The amount of water in polar ice caps and glaciers is more than the amount of groundwater.
- Which of the statements given above is/are correct?
- 1 only
 - 2 only
 - Both 1 and 2
 - Neither 1 nor 2

RELEVANCE

GS I : Physical Geography

In the way (The Hindu : 12-08-2026)

Tribunals are quasi-judicial bodies designed to provide specialised and speedy resolution of disputes. The Tribunal Reforms Bill, 2026 seeks to establish a National Tribunals Commission (NTC) as a common institutional framework for the governance and administration of tribunals. The Bill follows a prolonged period of judicial scrutiny over tribunal appointments, tenure, service conditions and executive influence. While it addresses several concerns, including tenure and uniform service conditions, questions remain over whether the proposed NTC has sufficient institutional autonomy to ensure genuinely independent tribunal administration.

Constitutional Framework and Role of Tribunals

Constitutional Basis: Part XIV-A introduced Articles 323A and 323B for tribunals.

Article 323A: Enables Parliament to establish administrative tribunals for public-service recruitment and service matters.

Article 323B: Enables appropriate legislatures to establish tribunals for specified matters such as taxation, industrial disputes and land reforms.

Specialised Justice: Tribunals provide expertise and speedy resolution in areas including taxation, company law, securities and environment.

Complementary Role: Tribunals supplement rather than replace constitutional courts and can help reduce judicial caseloads.



Tribunal Reforms and the 2026 Bill

Reform Trajectory: Tribunal rationalisation reduced the number from 26 to 19 through the Finance Act, 2017 and subsequently to 16 through the 2021 reforms.

Judicial Intervention: L. Chandra Kumar affirmed High Court judicial review; later judgments repeatedly addressed independence, tenure and appointments.

2025 Judgment: The Supreme Court restored principles including five-year tenure and directed establishment of an independent NTC within four months.

2026 Framework: The Bill proposes an NTC covering 16 tribunals, headed by a former Supreme Court judge or High Court Chief Justice, with judicial and technical members.

Additional Measures: It restores five-year terms, introduces uniform service conditions and provides for a National Tribunals Data Grid.

Significance

Institutional Independence: An independent framework can reduce the influence of ministries in the working of tribunals.

Uniformity: Common service conditions can reduce variations in administration across different tribunals.

Specialisation: Tribunals provide specialised dispute resolution in technical areas while complementing constitutional courts.

Access to Justice: Speedier and specialised adjudication can reduce pressure on other courts and improve the effectiveness of dispute resolution.

Concerns

Executive Influence: The Centre retains substantial control over NTC appointments, finances and administration, limiting its autonomy.

Delegated Powers: Section 14 leaves qualifications, selection methods and service conditions to future executive rules, raising concerns over excessive delegation.

Complaint Screening: Section 16 requires a Ministry to initially screen complaints before they reach the NTC for inquiry, creating a potential conflict of interest.

Institutional Autonomy: A commission intended to insulate tribunals from executive influence may remain dependent on the executive for key administrative functions.

The Tribunal Reforms Bill, 2026 addresses important concerns in tribunal administration, particularly tenure and uniform service conditions. However, the effectiveness of the proposed NTC will ultimately depend on the degree of autonomy it enjoys from executive control.

PYQ Compass
UPSC questions previously asked from
the themes discussed on this page.



Q. Comment on the need of administrative tribunals as compared to the court system. Assess the impact of the recent tribunal reforms through rationalization of tribunals made in 2021. (GS II – 2025)

When tear gas clears, what remains in Ranchi (I.E : 12-08-2026)

Recruitment is the entry point of personnel administration. In public administration, its importance extends beyond filling vacancies because the **quality of personnel directly affects administrative capacity and governance**. A fair recruitment system requires merit, transparency, equality of opportunity, reservation policies and institutional safeguards. The controversy surrounding civil service examinations in Jharkhand shows how allegations of paper leaks, result manipulation and other irregularities can undermine confidence in recruitment institutions and deepen public distrust among aspirants dependent on government employment.

Recruitment as the Foundation of Public Administration

Entry Point: Recruitment determines the quality of personnel entering public administration.

Administrative Capacity: Competent recruitment strengthens the efficiency, professionalism and responsiveness of the civil service.

Fairness: Merit, equality of opportunity and reservation policies must operate within a credible recruitment process.

Transparency: Clear procedures and institutional safeguards are essential for public confidence.

Good Governance: Recruitment quality directly contributes to ethical administration and effective state capacity.



Recruitment Challenges and the Jharkhand Context

Examination Irregularities: Allegations include paper leaks, revised results, interview-mark disputes and answer-key errors.

Institutional Credibility: Questions over repeated recruitment exercises have weakened confidence among aspirants.

Recruitment Backlog: No JPSC civil services examination was conducted during 2014–2019, while later governments attempted to clear the backlog through combined examinations.

Current Protests: The 14th examination controversy has triggered demands for cancellation, accountability and a CBI probe.

Wider Employment Crisis: Limited private-sector opportunities and distress-driven labour outflows have increased dependence on government employment.

RELEVANCE

GS II: Governance, Transparency and Accountability, Public Services

Governance Challenges and Significance

Public Trust: Unfair recruitment processes can weaken confidence in state institutions beyond the immediate examination.

Institutional Accountability: Allegations of irregularities require credible investigation and timely resolution.

Recruitment Reform: Transparent procedures, institutional safeguards and reliable examination processes are essential to restore credibility.

Beyond Recruitment: Jharkhand must also expand investment, improve infrastructure and build human capital to reduce excessive dependence on government jobs.

Sustained Engagement: Government, political parties, students and civil society need continued engagement to address both immediate grievances and structural concerns.

Way Forward

A credible civil service recruitment system is fundamental to administrative quality and public trust. The Jharkhand experience demonstrates that recruitment controversies can become symptoms of a wider crisis when government employment carries disproportionate importance for an aspirational population. Immediate accountability for irregularities must therefore be accompanied by sustained improvements in recruitment institutions and broader employment opportunities. Strengthening merit, transparency and institutional safeguards while expanding economic opportunities can help build a professional civil service and strengthen state capacity.

PYQ Compass
 UPSC questions previously asked from
 the themes discussed on this page.



Q. "Institutional quality is a crucial driver of economic performance". In this context suggest reforms in the Civil Service for strengthening democracy. (GS II – 2020)

WORLD

India–China Border Management: Peace, Territorial Assertions and Bilateral Relations

India–China relations remain closely linked to the management of their undemarcated boundary and maintenance of peace along the Line of Actual Control (LAC). Recent allegations of Chinese troop activity in Arunachal Pradesh and competing actions concerning geographical names have again brought border issues into focus. India has emphasised that peace and tranquillity in border areas are essential for the broader development of bilateral relations, while both sides continue to use diplomatic and military mechanisms to address outstanding issues and prevent misunderstanding and miscalculation.

Border Management and Institutional Mechanisms

Undemarcated Boundary: The absence of a mutually demarcated boundary can result in patrols facing each other along the LAC.

Border Forces: The Army and ITBP are geared towards monitoring and dominating the border and checking activities.

Diplomatic Mechanisms: The WMCC provides a channel for consultation and coordination on border affairs.

Military Mechanisms: Local commander-level meetings and other agreed mechanisms are used to address border issues.

Bilateral Linkage: India considers peace and tranquillity along the border essential for stable and broader bilateral relations.



Disaster Response

Alleged Incursion: Reports in August 2026 alleged PLA movement across the LAC at Pukar La and Ollo; the claims were not accepted as established facts.

Official Position: India reiterated that Chinese troops crossing into Indian territory would constitute a serious issue and stressed border peace.

Diplomatic Engagement: At the 36th WMCC meeting on August 6, both sides agreed to continue existing diplomatic and military channels.

Arunachal Naming: India formally identified 27 locations in Arunachal Pradesh by their standard names on its official map. ([Refer Quiz Up 12-08-2026](#))

Chinese Response: Chinese media criticised the move, while Chinese officials reiterated their position that China does not recognise Arunachal Pradesh.

RELEVANCE

GS II: India and its Neighbourhood

Significance

Border Stability: Maintaining peace and tranquillity reduces the possibility of confrontation, misunderstanding and miscalculation along the LAC.

Bilateral Relations: Conditions along the border directly influence the broader trajectory of India–China relations.

Territorial Assertion: Naming geographical locations reinforces India's administrative and territorial position concerning Arunachal Pradesh.

Dialogue: Continued use of diplomatic and military mechanisms provides avenues for managing disputes despite unresolved boundary issues.

Strategic Vigilance: Operational preparedness of border forces remains important for monitoring developments along sensitive border areas.

Emergency Response and Present Situation

Boundary Uncertainty: The undemarcated nature of the boundary creates scope for differing perceptions of the LAC and recurring patrol confrontations.

Competing Claims: Conflicting positions over Arunachal Pradesh continue to complicate mutual trust and border stability.

Escalation Risks: Actions perceived as unilateral assertions can adversely affect the atmosphere for negotiations.

Communication: Sustained diplomatic and military communication is necessary to prevent misunderstandings and unintended escalation.

Way Forward: India and China need continued engagement through existing mechanisms, alongside efforts to preserve peace and tranquillity as a foundation for managing broader bilateral relations.

PYQ Compass

UPSC questions previously asked from the themes discussed on this page.



Q. 'China is using its economic relations and positive trade surplus as tools to develop potential military power status in Asia'. In the light of this statement, discuss its impact on India as her neighbour. (GS II – 2017)

PYQ Compass

UPSC questions previously asked from the themes discussed on this page.



Q. Siachen Glacier is situated to the: (2020)

- a) East of Aksai Chin
- b) East of Leh
- c) North of Gilgit
- d) North of Nubra Valley

Ans : d

The Siachen Glacier is part of Ladakh, which has now been converted into a Union Territory. It is located in the eastern Karakoram range in the Himalayan mountains. It lies to the south of the great drainage divide that separates the Eurasian Plate from the Indian subcontinent in the glaciated portion of the Karakoram.

Q. With reference to the water on the planet Earth, consider the following statements: (2021)

- 1. The amount of water in the rivers and lakes is more than the amount of groundwater.
 - 2. The amount of water in polar ice caps and glaciers is more than the amount of groundwater.
- Which of the statements given above is/are correct?

- a) 1 only
- b) 2 only
- c) Both 1 and 2
- d) Neither 1 nor 2

Ans : b

Ocean water: 97.2 percent, Glaciers and other ice: 2.15 percent Groundwater,: 0.61 percent, Fresh water lakes: 0.009 percent Inland seas: 0.008 percent, Soil Moisture: 0.005 percent, Atmosphere: 0.001 percent, Rivers: 0.0001 percent.

Q. With reference to the Himalayan rivers joining the Ganga downstream of Prayagraj from West to East, which one of the following sequences is correct? (2024)

- a) Ghaghara – Gomati – Gandak – Kosi
- b) Gomati – Ghaghara – Gandak – Kosi
- c) Ghaghara – Gomati – Kosi – Gandak
- d) Gomati – Ghaghara – Kosi – Gandak

Ans : b

Downstream of Prayagraj, the correct sequence of Himalayan rivers joining the Ganga from west to east is:

Gomati: Joins the Ganga near Ghazipur (Uttar Pradesh).

Ghaghara: Joins the Ganga near Chhapra (Bihar).

Gandak: Joins the Ganga near Hajipur (Bihar).

Kosi: Joins the Ganga near Kursela (Bihar).

Thus, option (b) is correct.

PRACTICE QUESTIONS

Q. With reference to tribunals in India, consider the following statements:

1. Part XIV–A of the Constitution, containing provisions relating to tribunals, was inserted by the 42nd Constitutional Amendment Act, 1976.
2. Article 323A deals with administrative tribunals, while Article 323B deals with tribunals for specified matters such as taxation, industrial disputes and land reforms.
3. The power of judicial review of High Courts over tribunals is excluded by the Constitution.
4. The Supreme Court has held that judicial review by High Courts over tribunals is part of the basic structure of the Constitution.

Which of the statements given above are correct?

- (a) 1, 2 and 4 only
- (b) 1 and 3 only
- (c) 2, 3 and 4 only
- (d) 1, 2, 3 and 4

Answer: (a)

Q. Why is a comprehensive national registry of healthcare professionals important? It can improve healthcare workforce planning by showing the availability and location of professionals.

It can facilitate verification of professional credentials and reduce risks associated with fraudulent credentials.

It can help authorities identify and mobilise specialised personnel during public health emergencies.

Which of the statements given above is/are correct?

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

Answer: d) 1, 2 and 3

A comprehensive registry supports workforce planning, credential verification, and emergency personnel mobilisation.

Q. With reference to glacier dynamics, consider the following statements:

1. Glacier thinning can reduce the driving force responsible for ice movement.
2. Reduced glacier flow can decrease the transfer of ice from higher to lower elevations.
3. All glaciers respond to warming in the same manner regardless of their physical characteristics.

Which of the statements given above is/are correct?

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

Answer: a) 1 and 2 only

Statement 3 is incorrect: Glacier geometry, debris cover and terminus conditions can cause glaciers to respond differently to warming.

NEERI-ZAR Instant Water Purification System

The **CSIR-National Environmental Engineering Research Institute (CSIR-NEERI)** has deployed its indigenous **NEERI-ZAR Instant Water Filters** in flood-affected districts of Assam to provide safe drinking water where conventional water-supply systems have been disrupted or contaminated.

What is NEERI-ZAR?

- NEERI-ZAR is an indigenous emergency water-treatment technology developed by CSIR-NEERI to provide safe drinking water during floods, cyclones and other natural disasters.
- It is designed particularly for situations where local water sources become contaminated and electricity-dependent water-treatment infrastructure is unavailable or disrupted.
- The system can treat water obtained from rivers, ponds and wells, making it useful in areas where conventional drinking-water supply is interrupted.

Origin and Evolution of the Technology

- NEERI-ZAR was originally developed in 2006 during the floods in Barmer, Rajasthan.
- The technology was subsequently improvised and deployed during several disasters, including the 2009 Sundarbans cyclone, the 2013 Uttarakhand disaster, the 2015 Chennai floods, the 2018 Kerala floods and the 2019 Bihar floods.
- Its repeated deployment demonstrates how an indigenous technology can be adapted and reused across different disaster situations.

How Does NEERI-ZAR Work?

- NEERI-ZAR is a gravity-based water-purification system, meaning that it does not require electricity to operate.
- The system uses filtration and treatment processes to remove suspended matter, turbidity and microbial contamination from contaminated water.
- The technology therefore allows locally available water sources to be converted into water suitable for drinking and cooking during emergencies.
- Its gravity-based operation is particularly useful in disaster-hit areas where electricity supply and conventional water-treatment infrastructure may have been disrupted.

BRAIN BOOSTERS

Did You Know?

#307
12-08-2026

Civil Service Institute Pala



NEERI-ZAR

Why in news? The CSIR-National Environmental Engineering Research Institute (CSIR-NEERI) has deployed its indigenous NEERI-ZAR Instant Water Filters in flood-affected districts of Assam.

- NEERI-ZAR is an indigenous emergency water-treatment technology developed by CSIR-NEERI to provide safe drinking water during floods.
- It was originally developed in 2006 during the Barmer floods in Rajasthan as an emergency solution for providing potable water.
- The system uses **filtration and treatment processes** to remove suspended matter, turbidity and microbial contamination from contaminated water.
- It is designed for situations where local water sources become contaminated and electricity-dependent water-treatment infrastructure is unavailable or disrupted.
- The system can **treat water obtained from rivers, ponds and wells**, making it useful where conventional drinking-water supplies are interrupted.

Key Features of NEERI-ZAR

- **No electricity:** NEERI-ZAR operates without an external electricity supply, making it suitable for areas affected by power outages.
- **No operational cost:** Once deployed, the units do not require significant operational expenditure for their functioning.
- **Rapid deployment:** The units are designed to be easily transported, assembled and installed in disaster-affected areas.
- **Local water sources:** The system can treat contaminated water from sources such as rivers, ponds and wells.
- **Household and community use:** NEERI-ZAR is available in both household-based and community-based configurations.
- **Emergency suitability:** The system is specifically designed to provide drinking and cooking water when normal water-supply systems are disrupted.

Significance in Disaster Management

- Floods frequently contaminate drinking-water sources with pathogens, sewage, sediments and other pollutants, increasing the risk of water-borne diseases.
- When conventional water-treatment and distribution systems are damaged, affected communities often become dependent on bottled drinking water transported from outside the affected region.
- NEERI-ZAR provides a decentralised alternative by allowing communities to treat locally available water close to the point of consumption.