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1. Funding India's Climate Future, The Trillion-Dollar Question'(TH)

GS Paper III - Economic Development & Environment

Topic - Indian Economy and issues relating to planning, mobilization of resources, growth, development and employment.

Sub-Topic - Infrastructure - Energy; Conservation, environmental pollution and degradation, environmental impact assessment; Investment models.

Introduction

India faces a massive financial challenge in meeting its climate commitments. According to Balakrishna Pisupati (Head of UNEP India), the country's primary bottleneck is not the availability of funds itself, but rather the absence of a robust institutional architecture to channel capital effectively to green sectors.

1. The Scale of the Climate Financing Gap

Total Requirements - India needs ₹162.5 trillion (~\$2.5 trillion) by 2030 to meet its Nationally Determined Contributions (NDCs). Achieving net-zero emissions by 2070 will require \$10.1 trillion (nearly three times India's current GDP).

Sectoral Demand (2022-2030) - Decarbonizing just four major emitting sectors (Steel, Cement, Power, and Road Transport) requires \$467 billion in additional capital expenditure (~\$54 billion annually, or 1.3% of GDP).

Macro Estimates - The Reserve Bank of India (RBI) estimates India needs an additional annual investment of at least 2.5% of GDP for green financing until 2030.

The Global Shortfall - Developing economies need \$5-\$6 trillion by 2030. However, international aid is unreliable; the developed world missed its Paris promise of \$100 billion annually, and the Baku New Collective Quantified Goal (NCQG) commitment of \$300 billion by 2035 is widely deemed insufficient by India.

Conclusion - India must mobilize most funds internally.

2. Current Progress & Available Instruments

India is not starting from scratch and already possesses a variety of financial tools –

Market Growth – By the end of 2024, India issued \$55.9 billion in green, social, sustainability, and sustainability-linked debt (a 186% increase since 2021).

Green Debt Dominance – Green debt makes up 83% of the total, heavily concentrated in clean energy and transport.

Sovereign Green Bonds – ₹477 billion have been issued, successfully setting market benchmarks and boosting investor confidence.

Existing Tooling – Instruments like blended finance, transition finance, sustainability-linked bonds, and Infrastructure Investment Trusts (InvITs) are already operational but lack the scale to succeed.

3. Regulatory Shifts – The Role of the RBI (Mint Street)

The most significant climate finance progress in 2025 came from the RBI's structural regulatory interventions –

Comprehensive Framework (2025) – The RBI issued *Directions for Commercial Banks and Small Finance Banks*, mandating the integration of climate risks into lending and risk-management practices.

Priority Sector Lending (PSL) – Eligible green activities and sovereign green bonds are now recognized under PSL. This is a powerful lever, as banks must direct ₹4,000 crore out of every ₹10,000 crore lent toward PSL targets.

Information & Innovation – The RBI has launched a *Climate Risk Information System* to track bank-related vulnerabilities and included sustainable finance in its regulatory sandbox.

4. The Critical Weaknesses (The Missing Connective Tissue)

Lack of a Clear Taxonomy – India currently lacks a legally binding definition of what constitutes a "green" activity, leading to greenwashing risks and verification hurdles.

Underutilization of Blended Finance – India underuses structures where public/concessional funds absorb early risks. For instance, a first-loss guarantee of \$100 million could unlock \$500 million to \$1 billion in private co-investment for high-risk sectors (green hydrogen, offshore wind, green steel).

The Federal Disaggregation Gap – Climate adaptation (e.g., coastal protection in Odisha, drought-proofing in Vidarbha) happens at the State level. However, individual States lack the institutional infrastructure and credit capacity to access international climate finance directly.

5. Way Forward – Four Immediate Actions for India

1. **Finalize and Enact the Climate Finance Taxonomy** – The Ministry of Finance and Ministry of Steel must launch their respective taxonomies without delay to establish legal clarity, curb greenwashing, and unlock global capital compliance.
2. **Mandate Green Finance via the RBI** – Transition from merely *enabling* green finance to *forcing* it by introducing –
 1. **Differentiated Capital Requirements** – Making brown lending more capital-intensive and green lending cheaper.
 2. **Mandatory Climate Stress-Testing** – Assessing real physical risks (like flood risks in Bihar) against bank loan portfolios.
 3. **Expanded PSL Targets** – Including explicit adaptation goals alongside carbon mitigation.
3. **Establish a State Climate Finance Facility** – Create a dedicated financial hub capitalised by the Union Government, NABARD, and international partners to give States and municipalities structural access to green debt markets.

4. **Scale Sovereign Green Bonds (SGBs)** – Rapidly expand SGB issuances and embed them into the Statutory Liquidity Ratio (SLR) framework to deepen the domestic bond market and draw foreign institutional investment.

Source – https://www.thehindu.com/opinion/lead/funding-indias-climate-future-the-trillion-dollar-question/article71062224.ece#google_vignette

2. A national environmental survey whose time came

GS Paper III – Environment and Ecology

Topic – Conservation, environmental pollution and degradation, environmental impact assessment.

Sub-Topic – Environmental governance, institutional reforms, and sustainable development

Introduction

The article frames India's environmental crisis through anthropologist Anna Tsing's concept of the Anthropocene—an epoch where human disturbance outranks geological forces, creating unintended, uncontrollable ecological damage. Authors Saumya Gupta and Thirunavukarasu S. argue that while India faces an unfolding ecological crisis, its environmental governance suffers from institutional neglect and data fragmentation. The remedy proposed is a centralized, autonomous Annual Environmental Survey of India (EnvSI), modeled after the Economic Survey.

1. The Scale of India's Unfolding Crisis

India houses one-sixth of humanity on just 4% of the Earth's land area, magnifying its ecological vulnerabilities –

Public Experience – A Yale School of the Environment survey (Dec 2024–Feb 2025) of 10,751 Indians revealed high exposure to climate stresses –

1. Heatwaves – **71%**
2. Agricultural pests and diseases – **60%**
3. Power outages – **59%**
4. Water pollution – **53%**
5. Droughts and water shortages – **52%**
6. Air pollution – **52%**

Water Contamination – Out of 37% of the nation's 870 river-monitoring stations tracked by the Indian Meteorological Department and State of India's Environment reports, nearly half recorded alarming levels of toxic heavy metals.

Health & Climate Extremes – Air pollution in 2022 reduced average life expectancy by roughly three years. Furthermore, some regions experienced extreme weather for 88% of the year.

Land Degradation – The Desertification and Land Degradation Atlas of India estimates that 29.7% of the country's total land area is currently degraded.

2. Institutional Gaps in Current Environmental Governance

Despite the compounding crises, India's official environmental tracking remains insufficient due to several structural bottlenecks –

Underfunding – The Ministry of Environment, Forest and Climate Change (MoEFCC) is financially starved, receiving an allocation of just 0.07% of the annual budget.

Institutional Inertia – The environmental custody apparatus is chronically understaffed, intellectually neglected, and works in institutional silos with overlapping jurisdictions.

Flawed Reporting – Current MoEFCC annual reports highlight progress on specific programs (like the National Afforestation Programme and REDD+) but fail on key metrics –

1. They omit the actual scale of state-wise deforestation and its direct impact on biodiversity and livelihoods.
2. They obscure the qualitative nuances behind impressive plantation figures.
3. They sidestep rigorous scrutiny of fund utilization, environmental compliance, and adverse global scientific assessments.

3. The Solution – An Annual Environmental Survey of India (EnvSI)

The issue is not a lack of environmental data, but that existing measurements from governments, think tanks, universities, and private actors remain entirely fragmented.

Core Features of EnvSI –

The Blueprint – It must be modeled explicitly after the Economic Survey of India—prepared by an independent panel of experts, operating with enough autonomy to present inconvenient environmental realities, reject comforting narratives, and alert policymakers to structural risks.

Statutory Safeguards – The expert-led body requires a clear statutory mandate, functional autonomy, and protected tenure for its leadership.

Methodological Rigor – It should combine quantitative datasets with qualitative livelihood assessments, cross-verifying field-based evidence from public, private, and independent research circles.

4. Four Key Benefits of Establishing EnvSI

Disaster Mitigation and Resource Optimization – It coordinates state action to halt environmental degradation, temper climate-driven disasters, and optimize resource deployment.

Global Credibility and Financing – Providing transparent, audited progress helps India meet its climate timelines smoothly, enhancing global credibility and unlocking international climate financing.

Balanced Growth and Justice – It bridges the difficult trade-off between economic expansion and nature conservation, actively safeguarding tribal rights, traditional livelihoods, and displaced communities.

Strengthening the Ecological Commons – It formally recognizes and legally protects the deep interdependence between fragile ecosystems, species survival, and human societies.

Source – <https://www.thehindu.com/opinion/op-ed/a-national-environmental-survey-whose-time-came/article71062271.ece>

3. When mangroves do what seawalls cannot

GS Paper III – Environment & Disaster Management

Topic – Conservation, environmental pollution and degradation, environmental impact assessment; Disaster and disaster management.

Sub-Topic – Coastal zone management, climate change adaptation strategies, and nature-based solutions.

Introduction

Using the real-world example of Cyclone Dana hitting Odisha's coast, the article highlights how natural ecosystems like mangroves provide superior, self-sustaining protection against climate disasters compared to expensive artificial infrastructure. The authors argue that India must transition from costly,

engineered "grey" structures to Ecosystem-based Adaptation (EbA) by systematically classifying and scaling its immense natural capital.

1. The Coastal Crisis in Numbers

The Threat Scale – Climate change is multiplying threats across India's 11,000-kilometre coastline.

Impacted Population – Hazards like rising sea levels, saline water intrusion, intensifying cyclones, and storm surges directly threaten 250 million people living along the coast.

The Vulnerability Hotspot – Research identifies India as a global "hotspot" for coastal EbA, noting that India's mangroves protect more people per hectare than almost any other country.

2. Grey Infrastructure vs. Ecosystem-based Adaptation (EbA)

The article contrasts India's current preference for engineered solutions with the underutilized potential of natural defenses –

Hard Engineered "Grey" Protection

(Seawalls, groynes, embankments, tetrapods)

1. **High Financial Cost** – Coastal states spent ₹2,641 crore on hard protection measures over the last decade.
2. **Risk Displacement** – Instead of solving erosion, hard structures often shift the problem. For example, in Kerala, hard armouring protected specific sites but accelerated erosion and damage in adjacent areas.
3. **High Maintenance** – These structures are expensive to maintain and lack ecological co-benefits.

Ecosystem-based Adaptation (EbA)

(Mangroves, seagrass meadows, coral reefs, wetlands)

1. **Effective Climate Buffers** – They naturally absorb the shock of storm surges and reduce climate impacts while remaining self-healing.
2. **Socio-Economic Co-benefits** – They support local biodiversity, fisheries, agriculture, and tourism.
3. **Success Case (Sundarbans)** – Over 18,000 women restored 4,600 hectares of mangroves, which successfully blunted the impacts of Cyclones Amphan and Yaas. The project also generated local income via honey collection and crab farming.

3. Key Barriers to Scaling EbA in India

Despite its proven track record, EbA remains peripheral to India's core climate agenda due to four structural roadblocks –

1. **Funding Disparity** – While spending on hard infrastructure is in the thousands of crores, public funding for natural solutions is shrinking. The National Coastal Mission's budget plummeted from ₹195 crore (2022-23) to just ₹50 crore (2024-25).
2. **Institutional Fragmentation** – Fragmented ministerial mandates, weak monitoring systems, and a political preference for visible concrete infrastructure leave ecosystem solutions buried inside general programs.
3. **Terminology Confusion** – The policy space is crowded with overlapping, ambiguous labels like Nature-based Solutions (NbS), Ecosystem-based Coastal Adaptation (EbCA), and Ecosystem-based Disaster Risk Reduction (Eco-DRR), creating deep operational uncertainty.
4. **The "Concealment" Problem** – Interventions are rarely recorded as climate adaptation. For example, the MISHTI Scheme (*Mangrove Initiative for Shoreline Habitats & Tangible Incomes*), which targets the restoration of 540 square kilometres of mangroves across 9 states, is framed strictly as a

"restoration" program rather than an adaptation defense. Consequently, India's true adaptation portfolio appears much weaker than it is.

4. Why Clear Classification Matters

1. **Tracking Outcomes** – It allows planners to identify, monitor, and accurately evaluate long-term climate resilience.
2. **Securing Finance** – Proper classification ensures that the socio-economic benefits of nature are mathematically reflected in national budgeting and international climate financing.
3. **Global Reporting** – Under the UN's Global Goal on Adaptation, countries must measure and report adaptation outcomes. Without explicit tracking, India risks heavily undercounting its most effective climate responses.

5. Way Forward

India must transition from isolated, dispersed projects to a coherent national strategy that positions natural capital as its primary line of defense –

Integrate Policy – Explicitly embed EbA into coastal planning laws and climate adaptation policies.

Operationalize Metrics – Build frameworks to recognize, measure, and scale the protective worth of marine ecosystems.

Balance the Spend – Reallocate a substantial portion of coastal disaster budgets away from destructive grey structures and toward community-led ecosystem restoration.

Source – <https://www.thehindu.com/opinion/op-ed/when-mangroves-do-what-seawalls-cannot/article71061592.ece>

4. A framework for climate and development capital

GS Paper III – Economic Development & Environment

Topic – Indian Economy and issues relating to planning, mobilization of resources, growth, development; Investment models.

Sub-Topic – Sustainable Development Goals (SDGs), Renewable energy infrastructure, and inclusive economic growth.

Introduction

The article addresses a critical flaw in global and national finance – the artificial separation between climate funding and development funding. The author argues that because climate investments directly drive health, employment, and poverty reduction, financial markets need a unified framework that calculates the "full stack of returns" to unlock massive pools of sitting capital.

1. The Interlinked Financing Crisis

The Global Gap – Globally, there is a massive \$4 trillion Sustainable Development Goal (SDG) financing gap. Crucially, half (\$2 trillion) of this total gap lies entirely within the energy transition alone.

The Indian Context – To achieve the SDGs, India requires additional annual investments of around 6% of its GDP. The sectors driving this deficit—energy, infrastructure, and health—are exactly where climate funding is most urgently needed.

The Visibility Problem – Planners treat climate goals and development goals as separate pools of money, causing investors to see only a tiny fraction of an investment's true value.

2. The Concept of "Multiple Returns"

A single climate-focused investment automatically generates three distinct types of returns, though current frameworks only count the first one –

Health and Labour Costs – Fossil fuel burning causes 0.95 million premature deaths in India every year. Furthermore, extreme heat cost India 247 billion working hours in 2024 alone. Shifting to clean energy simultaneously cuts carbon, saves lives, and restores lost work hours.

Employment Generation – India's renewable energy sector is projected to create 3.4 million jobs by 2030. In areas with high structural unemployment, a green job is simultaneously a livelihood, health, and poverty-reduction outcome.

3. Real-World Ground Case Studies

Case Study A – The Kolhapur Foundry Cluster (Industrial Sector)

The Profile – A concentrated hub of small manufacturing units holding 5% of India's cast-iron exports and supporting 27,700 jobs.

The Crisis – These firms burn massive amounts of grid electricity and face severe external trade shocks, including the EU's incoming *Carbon Border Adjustment Mechanism* (CBAM) and strict American tariffs.

The Solution – Transitioning this cluster to open-access renewable power lowers their energy bills, shields them from global carbon taxes, and protects regional employment. The climate solution is identical to the economic survival solution.

Case Study B – Maharashtra's Cotton Belt (Agricultural Sector)

The Profile – A large-scale biochar program targeting 10 lakh (1 million) farmers.

The Double Reading – The program removes 1.45 million tonnes of CO_2 annually (the climate return) while simultaneously projecting an income uplift of ₹85,000 per farmer per year by improving soil quality, boosting yields, and reducing spending on fertilizers and pesticides (the development return).

The Market Failure – Current financial markets do not have instruments that allow an investor to easily buy into and hold both the carbon credit and the farmer's income gain at the same time.

4. The Role of Philanthropic & Commercial Capital

Bridging the Early-Stage Gap – Commercial capital will not fund the high-risk project setup phase (aggregating scattered demand across rural water boards, small cooperatives, municipal bodies, and factories).

The Philanthropic Catalyst – Philanthropy must step in to handle technical assistance – mapping energy usage (load shapes), documenting regulatory hurdles, and setting up payment security mechanisms.

Unlocking Market Competition – Once philanthropy builds this "analytically ready" pipeline, private commercial capital will actively compete to fund it.

5. Way Forward

Redesign Investment Theses – Stop evaluating environmental impact and social welfare in isolation. Funders must explicitly measure both financial and social returns.

Create Unified Financial Instruments – Develop new market assets that allow investors to capture multi-layered benefits (such as blending carbon credits directly with rural livelihood bonds).

Aggregate Fragmented Demand – Use public and philanthropic structures to bundle micro-level green projects into large, standardized pipelines that can attract global commercial capital at scale.

Source – <https://www.thehindu.com/opinion/op-ed/a-framework-for-climate-and-development-capital/article71060869.ece>

5. When El Niño becomes an economic crisis

GS Paper III – Economic Development, Indian Agriculture, & Disaster Management

Topic – Major crops/cropping patterns, irrigation; Inflation & mobilization of resources; Disaster and climate-risk management.

Sub-Topic – El Niño–Southern Oscillation (ENSO) economic impacts, climate change as an economic transmission mechanism, and informal labour vulnerability

Introduction

The article warns against treating extreme weather as just a natural inevitability. In India, a looming El Niño serves as an economic transmission mechanism—meaning climate shocks do not stay in the atmosphere; they instantly travel into the labour market, crop wholesale markets (*mandis*), household kitchens, and city streets, triggering a full-blown development crisis that hits the informal economy hardest.

1. Upcoming Climatic Projections (2026)

The Global Forecast – The U.S. National Oceanic and Atmospheric Administration's (NOAA) ENSO Diagnostic Discussion Report (2026) projects a rapid return of El Niño, outlining an 82% chance during May–July 2026 and a 96% chance of it persisting through the winter of 2026–27.

The National Forecast – The India Meteorological Department (IMD), in its 2026 Long Range Forecast for the Southwest Monsoon, has projected rainfall at 92% of the Long-Period Average (LPA), officially categorizing the upcoming monsoon as "below normal".

2. The Three Economic Transmission Channels

The climate shock travels through three distinct, destructive pathways across the Indian economy –

Channel 1 – The Heat Economy (Labour Impact)

1. **Vulnerable Demographics** – Punishingly hot, prolonged summers slash the productivity of outdoor workers with zero economic security (construction labourers, delivery riders, street vendors, and agricultural workers).
2. **The Result** – Heat stress directly lowers physical productivity, cuts daily working hours, and deepens severe income insecurity for millions of daily-wage earners.

Channel 2 – Agriculture (The Production Base)

1. **The Rainfall Lifeline** – A 2026 Reuters report notes that the southwest monsoon provides nearly 70% of the rainfall needed to water crops and recharge critical reservoirs and aquifers.
2. **The Result** – Below-normal rain makes crop-sowing decisions incredibly risky, drives up artificial irrigation costs, and forces rapid, unsustainable groundwater extraction. This magnifies economic instability for small and marginal farmers already battling volatile market prices.

Channel 3 – The Price Shock (Inflationary Pressures)

1. **Current Metrics** – According to the Ministry of Statistics and Programme Implementation's (MoSPI) Consumer Price Index release, food inflation rose to 4.2% in April 2026.
2. **The Result** – A weak monsoon threatens to accelerate price pressures across essential commodities like vegetables and pulses. For economic policymakers, this creates a double dilemma – a single climate shock simultaneously weakens GDP growth while fueling high inflation.

3. The Urban Inequality Gap

1. **The Urban Heat Trap** – Rapid concretization and shrinking green spaces are turning Indian cities into severe heat traps.

2. **The Wealth Divide** – The structural burden is starkly unequal. Wealthier households successfully adapt through insulated housing and air cooling. Meanwhile, poor urban households are forced to absorb the worst of overcrowding, acute water scarcity, and prolonged, dangerous heat exposure—widening urban economic inequalities.

4. Way Forward

India must upgrade its policy response from temporary disaster relief to deep, systemic climate adaptation –

Build Heat-Resilient Cities – Redesign urban infrastructure with expanded green cover and heat-reflective materials to eliminate local heat traps.

Enact Legal Worker Protection – Establish mandatory regulations for outdoor labourers, including flexible afternoon work breaks during extreme heat alerts and climate-linked income insurance.

Deploy Smart Water Management – Optimize reservoir mapping and promote rainwater harvesting to cushion the agricultural sector when the southwest monsoon drops below normal levels.

Source – <https://www.thehindu.com/opinion/op-ed/when-el-nino-becomes-an-economic-crisis/article71060937.ece>

QUESTION

FROM ARTICLE 3 – When mangroves do what seawalls cannot

Critically evaluate the efficacy of hard-engineered "grey" infrastructure versus Ecosystem-based Adaptation (EbA) in mitigating climate-induced coastal vulnerabilities in India. What policy roadblocks hinder the mainstreaming of nature-based solutions in India's disaster management strategy? (15 Marks, 250 Words)

Introduction

India's 11,000-kilometre coastline is home to nearly 250 million people who face compounding climate vulnerabilities, including rising sea levels, saline intrusion, and intensifying storm surges. While traditional disaster management heavily relies on hard-engineered structures, the landfall of recent cyclones like Cyclone Dana has underscored the superior, cost-effective defense provided by natural ecosystems, bringing Ecosystem-based Adaptation (EbA) to the forefront of the policy discourse.

1. Efficacy of Hard-Engineered "Grey" Infrastructure vs. EbA

Hard-Engineered "Grey" Infrastructure

1. **The Benefits** – Structures like seawalls, groynes, embankments, and tetrapods offer immediate, highly visible localized protection. They remain necessary and effective in high-density urban nodes where immediate land stabilization is critical.
2. **The Limitations** – Over the last decade, coastal states spent ₹2,641 crore on these measures. However, they are capital-intensive, expensive to maintain, and often displace risks rather than resolve them. For instance, hard armouring in specific sites along the Kerala coast successfully protected local segments but accelerated downstream erosion and severe damage in adjacent, un-armoured areas

Ecosystem-based Adaptation (EbA)

The Benefits – EbA utilizes biodiversity (mangroves, seagrass meadows, coral reefs) as natural shock absorbers. They are self-healing, structurally dynamic, and offer immense socio-economic co-benefits (e.g., carbon sequestration, fisheries, and ecotourism).

The Evidence – In the Sundarbans, a community-led drive by 18,000 women restoring 4,600 hectares of mangroves successfully blunted the impacts of Cyclones Amphan and Yaas while diversifying local livelihoods through crab farming and honey collection. India is recognized as a global "hotspot" where mangroves protect more people per hectare than almost any other country.

The Limitations – Nature-based solutions require gestation time to grow and establish, making them less viable for instant post-disaster relief or hyper-urbanized port fronts.

2. Policy Roadblocks in Mainstreaming EbA in India

Despite its proven efficacy, EbA remains peripheral to India's climate resilience strategy due to the following structural bottlenecks –

Severe Funding Disparities – Public expenditure heavily favours concrete infrastructure over ecological restoration. While hard protection schemes consume thousands of crores, funding for natural solutions is shrinking—the National Coastal Mission's budget plummeted from ₹195 crore (2022-23) to just ₹50 crore (2024-25).

Institutional Fragmentation and Visibility Bias – Project custodians work in fragmented, siloed mandates with weak ecological monitoring systems. Furthermore, standard administrative mechanisms favour visible, brick-and-mortar infrastructure over long-term, community-led natural interventions.

Conceptual and Classification Ambiguity – The policy space is crowded with overlapping terms like Nature-based Solutions (NbS), Eco-DRR, and EbCA. This ambiguity conceals adaptation benefits inside general forestry or development plans.

The "Concealment" Problem – Flagship schemes like MISHTI (targeting 540 square kilometers of mangrove restoration across 9 states) are strictly categorized under "restoration" rather than "climate adaptation." This administrative misclassification prevents India from accurately tracking, measuring, and funding its adaptation outcomes under the UN's Global Goal on Adaptation.

Conclusion

To secure its coastal margins, India must transition from localized, hard-engineered infrastructure projects to a coherent national policy framework that operationalizes natural capital. By establishing a strict policy classification for EbA, rebalancing public spending away from grey structures, and integrating local communities, India can transform its fragile coastline into its most resilient and equitable line of defense.

Source – <https://www.thehindu.com/opinion/op-ed/when-mangroves-do-what-seawalls-cannot/article71061592.ece>

6. Old ties, new Kathmandu – What India now needs to negotiate with Nepal (IE)

GS Paper II – International Relations / India and its Neighbourhood- Relations

Topic – India and its neighbourhood relations; Effect of policies and politics of developed and developing countries on India's interests.

Sub-Topic - India-Nepal Relations, Gen Z Movements and Emerging Political Actors (RSP), Big Brother Syndrome vs. Equal Partnership, The China Factor in Kathmandu, and Digital Development Diplomacy.

1. Introduction

A major structural shift is transforming the political landscape of Nepal, carrying immediate consequences for its traditional ties with India. The sweeping rise of the ruling Rastriya Swatantra Party (RSP) in March 2026—following intense youth-led "Gen Z" protests—has brought a new class of anti-establishment leaders to power, exemplified by Prime Minister Balen Shah and RSP Chief Rabi Lamichhane. This transformation marks a clear break from the old political order. New Delhi, historically accustomed to dealing with predictable, long-term political actors who took turns forming governments, must now adapt its neighbourhood diplomacy to handle an assertive, youth-dominated administration in Kathmandu.

2. The Paradigm Shift - Gen Z Mobilization and "New Nepal" Politics

The demographic profile and administrative style of Nepal's new leadership have fundamentally altered traditional diplomatic norms -

The Youth-Dominated Parliament - Driven directly by the Gen Z movement, the average age of Nepal's parliament has dropped significantly, with almost 38% of Nepali lawmakers now younger than 40.

Disrupting Diplomatic Protocols - PM Balen Shah—a first-time MP turned Prime Minister—has introduced strict new guidelines. On the diplomatic front, he refuses to meet foreign officials and ministers ranked below his status, choosing to engage exclusively with heads of state or governments.

Impact on Diplomatic Access - Under these rules, Shah has met foreign envoys—including the Indian Ambassador in Kathmandu—only in large group formats rather than individual one-on-ones. He declined individual audiences with high-level visitors like US Ambassador to India Sergio Gor, who also serves as the special envoy for South and Central Asian affairs.

The Travel Freeze - Shah declared a self-imposed ban on foreign travel during his first year in office to focus on domestic economic and anti-corruption agendas. This decision disrupted the historical tradition where India serves as the first overseas stop for a new Nepali Prime Minister, forcing Indian Foreign Secretary Vikram Misri to cancel a planned trip to Kathmandu to extend an official state invitation.

The Contrast with Bangladesh - While observers try to draw parallels between the youth-led protests in Nepal and Bangladesh, they differ on a key democratic point - Nepal's mainstream parties quickly organized formal elections within six months of the fall of the KP Sharma Oli government, ensuring a smooth transition.

3. Breaking the Diplomatic Deadlock - Lamichhane's Visit to New Delhi

To overcome the initial administrative freeze, the two nations used alternative political channels to keep communication open -

Party-to-Party Engagement - Rabi Lamichhane—the head of the RSP and the second-most powerful political figure in Nepal—accepted an invitation from India's ruling party for a party-level engagement to open diplomatic doors.

High-Level Assurance - Prime Minister Narendra Modi met Lamichhane, reaffirming that Nepal remains India's "priority partner" and expressing readiness to take the bilateral relationship to greater heights. External Affairs Minister S. Jaishankar and Home Minister Amit Shah also held extensive meetings with the RSP chief.

Pragmatic Political Maturity - Lamichhane demonstrated political tact during the visit. Despite taking office just days after PM Shah publically claimed that India had "encroached" on Nepali territories,

Lamichhane avoided public mention of the border dispute. Instead, he focused on a forward-looking vision of shared civilization bonds, digital corridors, and seamless regional connectivity.

4. Deconstructing the "Big Brother" Syndrome

A recurring challenge for New Delhi is managing local perceptions within Nepal regarding India's role –

The Bully Narrative – Some sections of Nepal's population, particularly the youth, view India as an intrusive, "bullying big brother".

The 2015 Blockade Strain – This suspicion stems largely from India's political actions and statements in 2015. New Delhi openly criticized the drafting of the new Nepali Constitution for not providing enough rights to the Madhesi community, which maintains close ties across the border. This friction was accompanied by an unofficial, months-long economic blockade along the India-Nepal border in Bihar, which deeply alienated large sections of the Nepali population.

Elder Brother Alternative – In response, India has attempted to project itself as a benevolent "elder brother"—a distinction emphasized by former External Affairs Minister Sushma Swaraj to move away from the negative overtones of a "big brother" approach.

5. Irreplaceable Deep Interdependencies

Despite political shifts, South Block maintains that the deep human and economic ties between the two nations are too strong to be overlooked –

Trade and Demographics – India remains Nepal's largest trading partner. Approximately 80 lakh Nepali citizens live and work within India, while around 6 lakh Indian nationals reside in Nepal.

Tourism and Capital Inflows – Indian nationals account for about 30% of all foreign tourists visiting Nepal.

The Remittance Lifeline – The bilateral remittance flow is highly valuable, estimated at nearly \$3.5 billion from India to Nepal and \$1 billion from Nepal to India annually.

6. The China Factor and Geopolitical Competition

Kathmandu's shifting political scene takes place within a larger context of geopolitical competition –

The Geopolitical Sandwich – Nepal finds itself located directly between two major Asian powers, India and China, while the United States is also playing an active role in the region's landscape.

Playing the China Card – Nepali leaders have historically used their relationship with Beijing as a diplomatic card to counter Indian influence.

Beijing's Active Diplomatic Role – New Delhi is monitoring Beijing's efforts to play a more influential role in Nepal's internal affairs. Notably, the former Chinese ambassador to Nepal now heads the crucial border division within the Chinese Foreign Ministry, bringing deep local expertise to Beijing's regional strategy.

Strategic Security Cooperation – As the UAE or other regional actors shift alignments, China is expanding its security footprint. This includes reports of growing strategic coordination where Nepal could look to deploy advanced defensive hardware, such as Israeli or alternative air-defense systems, emphasizing its desire to manage its security independently.

The Non-Interference Guardrail – India has rejected any third-party or international involvement—including from China or the United States—in resolving its long-standing bilateral boundary disputes with Nepal.

7. Transitioning to "Development Diplomacy" and the Way Forward

To build a resilient partnership with Nepal's new leadership, India must modernize its diplomatic approach –

Adopting an Equal Partnership Model – New Delhi should move away from paternalistic "big brother" or "elder brother" frameworks, choosing instead to treat Nepal as a completely equal partner in bilateral affairs.

Focusing on Digital Corridors – Shifting the focus of bilateral cooperation toward digital public infrastructure. This involves setting up "digital corridors" via unified payment mechanisms like the UPI to simplify remittance tracking and improve financial connectivity.

Expanding Hard Infrastructure Links – Accelerating cross-border connectivity projects by upgrading shared road networks, expanding cross-border rail lines, and developing new aviation routes.

Nuanced Political Engagement – India's stance must remain flexible and adaptive. By keeping communication open and supporting the new administration's goals of economic stabilization, corruption crackdowns, and infrastructure growth, India can prevent external competitors from exploiting local political grievances among the Nepalese youth.

Source – <https://indianexpress.com/article/explained/old-ties-new-kathmandu-what-india-now-needs-to-negotiate-with-nepal-10724634/>

QUESTION

"The emergence of new, youth-led political entities in Nepal challenges the traditional patterns of New Delhi's neighborhood diplomacy. Examine the structural bottlenecks in India-Nepal relations in light of this demographic shift, and suggest how 'development diplomacy' can counter external geopolitical competition in the sub-Himalayan region." (250 Words, 15 Marks)

1. Introduction

India's neighborhood diplomacy has traditionally relied on long-standing relationships with established political actors across South Asia. However, the rise of the Rastriya Swatantra Party (RSP) in Nepal—where nearly 38% of lawmakers are now under the age of 40—presents a new political reality. This demographic shift demands that New Delhi move past its historical paternalistic approaches to engage with a more assertive, protocol-conscious leadership in Kathmandu.

2. Structural Bottlenecks and Changing Local Perceptions

The transition to this new political era highlights several key challenges in the bilateral relationship –

1. **The "Big Brother" Perception** – A major hurdle is the persistent local narrative among Nepalese youth that views India as an intrusive "big brother". This sentiment is often fueled by past friction, such as New Delhi's public intervention during the 2015 constitutional drafting process and the subsequent border disruptions that caused widespread economic hardship.
2. **Disruption of Traditional Diplomatic Access** – The anti-establishment administration under PM Balen Shah has altered standard diplomatic protocols. By limiting individual access for foreign diplomats and freezing early foreign travel, the new leadership has disrupted traditional communication channels, requiring India to find alternative ways to build state-level ties.
3. **The Geopolitical Use of the "China Card"** – Kathmandu has historically balanced its relations by engaging with Beijing. With China expanding its presence through dedicated border divisions and infrastructure initiatives, any unresolved bilateral grievances leave an opening for external influence to grow among the Nepalese youth.

3. Countering Competition Through Development Diplomacy

To build a resilient partnership, India must update its strategy around modern economic and infrastructure links –

Shifting to an Equal Partnership Model – Moving away from outdated paternalistic descriptions like "elder brother" to treat Nepal as a sovereign equal, helping to ease historical anxieties over regional dominance.

Building Digital Public Infrastructure – Expanding digital corridors by integrating unified payment systems like UPI across borders. This directly supports the \$3.5 billion remittance flow that underpins local household economies.

Strengthening Physical Interconnectivity – Accelerating high-impact projects across road, rail, and air transit networks to leverage India's position as Nepal's natural economic gateway and primary trading partner.

Conclusion

The political transformation in Kathmandu presents an opportunity for India to modernize its neighborhood policy. By focusing on transparent, institutionalized development diplomacy and digital connectivity while respecting the autonomy of Nepal's younger leadership, India can secure its long-term strategic interests and build a stable, prosperous, and mutually beneficial sub-Himalayan partnership.

Source – <https://indianexpress.com/article/explained/old-ties-new-kathmandu-what-india-now-needs-to-negotiate-with-nepal-10724634/>

7. Local heat intelligence matters (BL)

General Studies Paper – General Studies Paper III – Disaster Management, Environment and Climate Change

Topic – Heat Waves and Climate Change

Sub-Topic – Climate Adaptation and Resilience

Introduction

Heatwaves are emerging as one of India's most severe climate-related hazards. Rising temperatures, increasing frequency of extreme heat events, and rapid urbanization have amplified heat-related risks to public health, infrastructure, agriculture, and economic productivity. Effective heatwave management requires a shift from broad regional assessments to localized, data-driven heat intelligence systems.

1. Growing Heatwave Challenge in India

Increasing Frequency and Intensity

1. Heatwaves are becoming more frequent, prolonged, and intense across India.
2. Climate change is increasing both daytime and night time temperatures.

Expansion of Heat-Prone Areas

1. Regions previously less vulnerable are increasingly experiencing extreme heat conditions.
2. Heat stress is spreading across diverse climatic zones.

Compound Climate Risks

1. Heatwaves often interact with droughts, water scarcity, and urban heat island effects.
2. Multiple hazards increase overall vulnerability.

2. Limitations of Existing Approaches

Dependence on Broad Averages

1. State-level or district-level averages often conceal local hotspots.
2. Micro-climatic variations remain inadequately captured.

Generic Risk Assessments

1. Uniform thresholds may not reflect local exposure and vulnerability.
2. Critical infrastructure and vulnerable populations may remain overlooked.

Reactive Rather Than Preventive Measures

1. Focus often remains on emergency response instead of risk anticipation.
2. Limited use of predictive and location-specific planning.

3. Need for Local Heat Intelligence**High-Resolution Risk Mapping**

1. Identify neighbourhood-level heat hotspots.
2. Assess localized temperature, humidity, and exposure patterns.

Vulnerability Identification

Map populations most at risk, including –

1. Elderly persons
2. Children
3. Outdoor workers
4. Urban poor
5. Informal sector workers

Evidence-Based Decision Making

1. Enable targeted interventions and resource allocation.
2. Improve effectiveness of heat action plans.

Real-Time Monitoring

1. Integrate weather observations with local data systems.
2. Support dynamic and responsive governance.

4. Sectoral Impacts of Heatwaves**Public Health**

1. Increased heat-related illnesses and mortality.
2. Greater burden on healthcare infrastructure.

Agriculture

1. Reduced crop productivity and livestock stress.
2. Higher irrigation requirements.

Energy Sector

1. Rising electricity demand for cooling.
2. Increased risk of power shortages and grid stress.

Labour Productivity

1. Reduced working hours and productivity.
2. Significant economic losses in heat-exposed sectors.

Urban Infrastructure

1. Damage to roads, transport systems, and public utilities.
2. Increased water demand and supply challenges.

5. Role of Technology and Data**Geospatial Technologies**

1. GIS-based mapping of heat vulnerability.
2. Identification of micro-climatic variations.

Remote Sensing and Satellites

1. Monitoring land surface temperatures.
2. Tracking urban heat island effects.

Artificial Intelligence and Analytics

1. Forecast localized heat risks.
2. Support predictive planning and early warning systems.

Integrated Data Platforms

1. Combine weather, health, infrastructure, and demographic data.
2. Enable comprehensive risk assessment.

6. Strengthening Heat Resilience**Localized Heat Action Plans**

1. Develop city-specific and district-specific strategies.
2. Tailor interventions to local conditions.

Climate-Resilient Urban Planning

1. Increase green spaces and urban forests.
2. Promote cool roofs and climate-sensitive building designs.

Public Awareness

1. Improve community preparedness and risk communication.
2. Encourage heat-safe behavioural practices.

Protection of Vulnerable Groups

1. Establish cooling centres and emergency response mechanisms.
2. Strengthen occupational safety measures for outdoor workers.

7. Policy Measures Required**Institutional Coordination**

Improve collaboration among meteorological, health, urban, and disaster management agencies.

Data-Driven Governance

1. Create local heat observatories and monitoring systems.
2. Strengthen municipal-level climate planning.

Investment in Climate Adaptation

1. Expand climate-resilient infrastructure.
2. Mainstream heat risk considerations into development planning.

Strengthen Early Warning Systems

1. Deliver localized forecasts and alerts.
2. Improve last-mile communication.

Way Forward**Shift from Reactive to Preventive Governance**

1. Anticipate risks before extreme events occur.
2. Integrate heat resilience into long-term development strategies.

Build Local Climate Intelligence Systems

1. Use high-resolution data, technology, and community participation.
2. Enable targeted interventions at the neighbourhood level.

Mainstream Heat Resilience

Incorporate heat-risk management into urban planning, public health, agriculture, and infrastructure policies.

Conclusion

Heatwaves are no longer isolated weather events but a major developmental and public health challenge. India must move beyond broad climatic averages and adopt localized heat intelligence systems that enable precise risk assessment, targeted interventions, and climate-resilient governance. Strengthening local heat resilience will be crucial for protecting lives, livelihoods, and economic growth.

Source - <https://www.thehindubusinessline.com/opinion/why-local-heat-intelligence-matters/article71062200.ece>

Question

Q. Heatwaves are emerging as a major climate and developmental challenge in India. Discuss the need for localized heat intelligence and examine how technology-driven governance can improve heatwave resilience. (250 Words)

Introduction

Heatwaves have become increasingly frequent and intense in India due to climate change, urbanization, and changing land-use patterns. Their impacts extend beyond public health to agriculture, infrastructure, energy security, and economic productivity, necessitating localized and data-driven governance approaches.

Need for Local Heat Intelligence

Addressing Micro-Climatic Variations

1. Broad regional averages often fail to capture local heat hotspots.
2. Neighbourhood-level assessments help identify vulnerable areas.

Protecting Vulnerable Populations

1. Enables targeted support for elderly persons, children, outdoor workers, and low-income communities.
2. Improves effectiveness of heat action plans.

Enhancing Disaster Preparedness

1. Supports proactive interventions through real-time monitoring and forecasting.
2. Facilitates efficient resource allocation.

Role of Technology-Driven Governance

Geospatial and Remote Sensing Tools

1. Map heat hotspots and urban heat islands.
2. Monitor temperature variations at high resolution.

Artificial Intelligence and Analytics

1. Improve forecasting accuracy and risk prediction.
2. Support early warning systems.

Integrated Data Platforms

1. Combine climate, health, infrastructure, and demographic data.
2. Enable evidence-based decision-making.

Conclusion

Localized heat intelligence is essential for effective climate adaptation and disaster risk reduction. By leveraging technology, data analytics, and decentralized governance, India can strengthen heat resilience, reduce vulnerabilities, and protect lives and livelihoods from escalating heatwave risks.

Source – <https://www.thehindubusinessline.com/opinion/why-local-heat-intelligence-matters/article71062200.ece>

8. World Environment Day – Nature, climate change and the path forward (TP)

General Studies Paper – General Studies Paper III – Environment, Ecology and Climate Change

Topic – Climate Change and Global Warming

Sub-Topic – Renewable Energy

Introduction

Environmental degradation, biodiversity loss, pollution, and climate change have emerged as major global challenges. Rising temperatures, extreme weather events, ecosystem destruction, and unsustainable consumption patterns threaten ecological balance and human well-being. Addressing these challenges requires a combination of conservation, clean energy transition, sustainable development, and community participation.

1. Major Environmental Challenges

Climate Change

1. Rising global temperatures due to greenhouse gas emissions.
2. Increased frequency of heatwaves, floods, droughts, and cyclones.

Biodiversity Loss

1. Habitat destruction threatens plant and animal species.
2. Declining biodiversity weakens ecosystem resilience.

Deforestation and Land Degradation

1. Forest loss reduces carbon sequestration capacity.
2. Soil erosion and desertification affect agricultural productivity.

Pollution

1. Air, water, and soil pollution impact public health and ecosystems.
2. Improper waste management aggravates environmental degradation.

2. Importance of Ecosystem Conservation

Climate Regulation

1. Forests, wetlands, and oceans act as carbon sinks.
2. Help mitigate the impacts of climate change.

Water Security

1. Healthy ecosystems regulate water cycles and groundwater recharge.
2. Support sustainable water availability.

Biodiversity Protection

1. Conserves genetic resources and ecological balance.
2. Supports food security and ecosystem services.

Livelihood Support

1. Millions depend on forests, fisheries, and natural resources.
2. Conservation promotes sustainable livelihoods.

3. Renewable Energy as a Climate Solution**Solar Energy**

1. Reduces dependence on fossil fuels.
2. Supports clean and sustainable power generation.

Wind Energy

1. Provides low-carbon electricity generation.
2. Enhances energy security.

Bioenergy and Green Fuels

1. Promote diversification of energy sources.
2. Support rural economies and waste utilization.

Energy Transition Benefits

1. Reduces greenhouse gas emissions.
2. Improves air quality and public health.

4. Role of Climate Finance and Carbon Markets**Green Investments**

1. Mobilize resources for clean energy and climate adaptation projects.
2. Support sustainable infrastructure development.

Carbon Markets

1. Provide incentives for emission reduction.
2. Encourage adoption of cleaner technologies.

International Climate Finance

1. Supports developing countries in achieving climate goals.
2. Enhances resilience and adaptation capacity.

5. Need for Sustainable Development**Resource Efficiency**

1. Promote efficient use of water, energy, and raw materials.
2. Reduce ecological footprints.

Circular Economy

1. Encourage recycling, reuse, and waste minimization.
2. Reduce pressure on natural resources.

Sustainable Agriculture

1. Climate-resilient farming practices.
2. Conservation of soil and water resources.

Green Infrastructure

1. Environment-friendly urban planning and transport systems.
2. Enhance resilience against climate impacts.

6. Community Participation and Local Action**Grassroots Conservation**

1. Involvement of local communities in resource management.
2. Strengthens long-term sustainability.

Environmental Awareness

1. Promote sustainable consumption and behavioural change.
2. Encourage citizen participation in environmental protection.

Traditional Knowledge

1. Integrate indigenous and local knowledge systems.
2. Enhance ecosystem management practices.

7. Policy Measures Required**Strengthen Environmental Governance**

1. Improve implementation of environmental regulations.
2. Enhance monitoring and compliance mechanisms.

Accelerate Clean Energy Transition

1. Expand renewable energy deployment.
2. Promote energy efficiency measures.

Invest in Climate Adaptation

1. Build climate-resilient infrastructure.
2. Strengthen disaster preparedness and risk reduction.

Restore Ecosystems

1. Afforestation and landscape restoration programmes.
2. Conservation of wetlands, mangroves, and biodiversity hotspots.

Way Forward**Integrate Environment and Development**

1. Ensure economic growth aligns with ecological sustainability.
2. Mainstream environmental considerations into policy planning.

Promote Green Growth

1. Encourage innovation, clean technologies, and sustainable industries.
2. Create green jobs and resilient economies.

Strengthen Global Cooperation

1. Enhance international collaboration on climate action and biodiversity conservation.
2. Support implementation of global environmental commitments.

Conclusion

Environmental protection and climate action are essential for sustainable development and human well-being. A balanced approach combining ecosystem conservation, renewable energy adoption, climate-resilient development, and community participation can help build a greener, healthier, and more sustainable future for present and future generations.

Source - <https://dailypioneer.com/news/world-environment-day-nature-climate-change-and-the-path-forward>

Question

Climate change and environmental degradation pose significant challenges to sustainable development. Discuss the role of ecosystem conservation, renewable energy, and climate-resilient policies in addressing these challenges. (250 Words)

Introduction

Climate change, biodiversity loss, and environmental degradation have emerged as major global concerns affecting ecological stability, economic growth, and human welfare. Addressing these challenges requires integrated and sustainable policy interventions.

Role of Ecosystem Conservation

Climate Mitigation

1. Forests, wetlands, and oceans function as carbon sinks.
2. Reduce atmospheric greenhouse gas concentrations.

Biodiversity Protection

1. Conserves species diversity and ecosystem services.
2. Enhances ecological resilience.

Water and Livelihood Security

1. Supports groundwater recharge and sustainable livelihoods.
2. Strengthens food and water security.

Role of Renewable Energy

Clean Energy Transition

1. Reduces dependence on fossil fuels.
2. Lowers greenhouse gas emissions.

Energy Security

1. Diversifies energy sources and reduces import dependence.
2. Supports long-term sustainable growth.

Climate-Resilient Policies

Adaptation Measures

1. Climate-resilient agriculture and infrastructure.
2. Improved disaster preparedness and risk reduction.

Sustainable Development

1. Promotes resource efficiency and circular economy practices.
2. Integrates environmental concerns into development planning.

Conclusion

Achieving sustainable development requires a comprehensive strategy that combines ecosystem conservation, renewable energy expansion, and climate-resilient governance. Such an approach can simultaneously address environmental challenges while ensuring economic growth and social well-being.

Source - <https://dailypioneer.com/news/world-environment-day-nature-climate-change-and-the-path-forward>