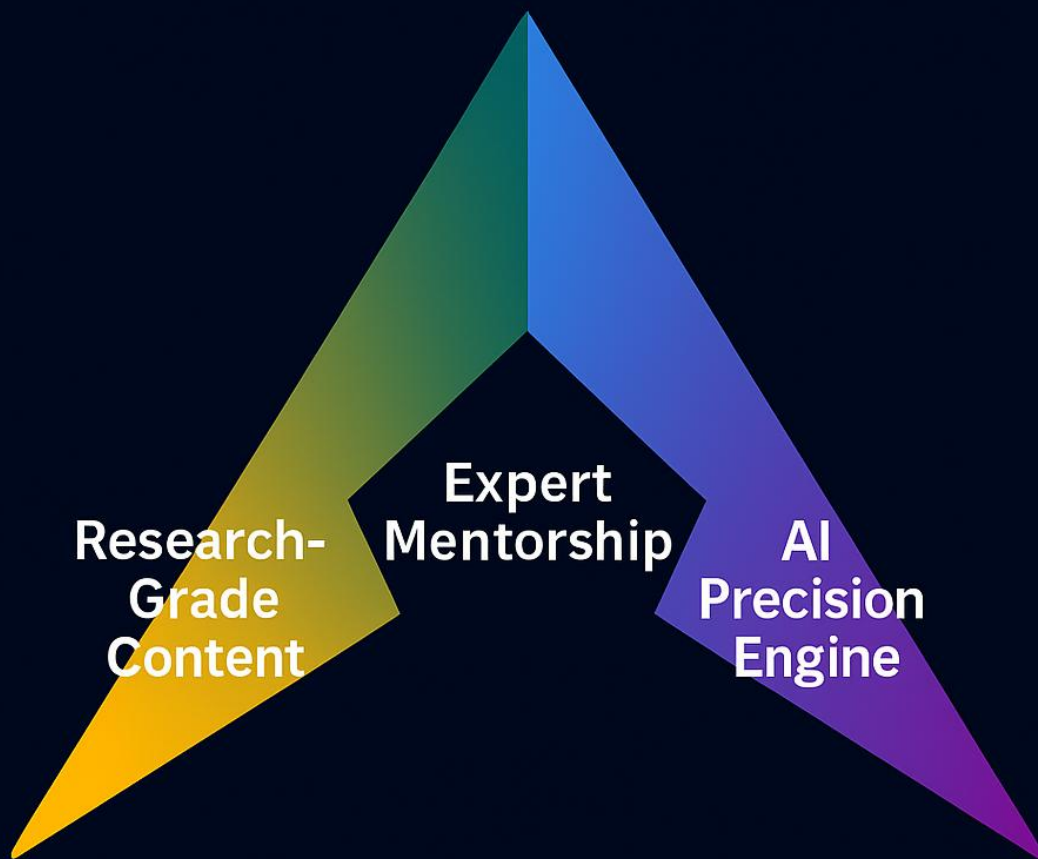


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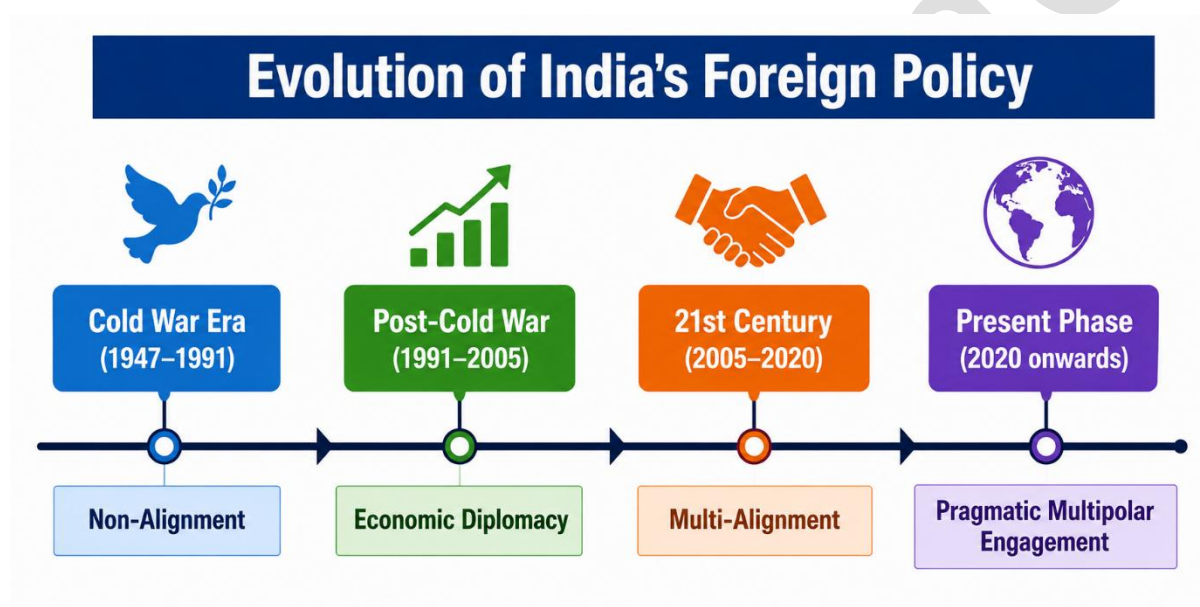
GS Paper II: International Relations

1. Five Principles Guiding India's Diplomacy in a Changing World Order

a. Introduction

India's contemporary foreign policy is evolving in response to a rapidly transforming international environment characterised by intensifying United States–China competition, instability in West Asia, supply-chain restructuring, technological rivalry and the emergence of a fragmented yet multipolar world order. India's engagements with the Gulf region, Europe, Africa and major plurilateral platforms such as BRICS and the Quad reflect this transformation.

In this context, India's diplomacy is increasingly guided by five interconnected principles—Reciprocity, Diversification, Strategic Flexibility, Strategic Expansion and Domestic Renewal—which collectively seek to safeguard national interests while enhancing India's global influence.



b. Evolution of India's Foreign Policy

India's foreign policy has continuously adapted to changing geopolitical realities while preserving the fundamental objective of strategic autonomy and national development.

Phase	Dominant Characteristic
Cold War Era	Non-Alignment and Strategic Autonomy
Post-Cold War Period	Economic Diplomacy and Global Integration
Early Twenty-First Century	Multi-Alignment and Issue-Based Partnerships
Contemporary Phase	Pragmatic Engagement in a Multipolar World

Key Evolutionary Trends

- Transition from ideological positioning to pragmatic engagement.
- Increasing emphasis on economic and technological partnerships.
- Expansion from regional influence to global participation.

- Greater focus on shaping international outcomes rather than merely responding to them.

c. The Contemporary Global Context

The international system is undergoing a period of significant transition.

Major Global Trends

- Intensifying strategic competition between the United States and China.
- Continuing instability in West Asia.
- Fragmentation and reconfiguration of global supply chains.
- Rise of minilateral and issue-based coalitions.
- Competition in Artificial Intelligence, semiconductors and emerging technologies.
- Growing concerns regarding energy security and critical minerals.
- Strategic contestation across Africa and the Indo-Pacific.

Implications for India

- Traditional alliance structures offer limited flexibility.
- Economic and technological security have become central diplomatic objectives.
- Independent decision-making has become increasingly important.
- Multiple partnerships provide strategic resilience.

d. The Five Principles of India's Diplomacy

i. Reciprocity: Building Partnerships Through Mutual Support

Reciprocity refers to the principle of mutual trust, support and cooperation based on long-term strategic interests.

Practical Manifestation

- India's partnership with Gulf countries, particularly the United Arab Emirates, illustrates this approach.

Areas of Cooperation

- Energy security.
- Trade and investment.
- Technology partnerships.
- Logistics and connectivity.
- Counter-terrorism cooperation.
- Diaspora welfare.

Significance

- Enhances diplomatic credibility.
- Builds long-term trust.
- Creates durable strategic partnerships.
- Strengthens India's reputation as a reliable partner.

ii. Diversification: Expanding Strategic Options

Diversification seeks to broaden India's economic, technological and geopolitical partnerships.

Contemporary Examples

- India's deepening engagement with Europe reflects this objective.

Areas of Cooperation

- Trade and investment.
- Green technologies.
- Renewable energy.
- Semiconductor ecosystems.
- Mobility partnerships.
- Supply-chain resilience.

Strategic Importance

- Reduces vulnerability to geopolitical shocks.
- Strengthens economic resilience.
- Enhances access to advanced technologies.
- Expands export opportunities.

iii. Strategic Flexibility: Multi-Alignment in Practice

Strategic flexibility refers to India's ability to engage simultaneously with multiple centres of power while preserving independent decision-making.

Platforms Reflecting Multi-Alignment

- BRICS
- Quadrilateral Security Dialogue (Quad)
- G20
- Shanghai Cooperation Organisation
- Indo-Pacific Economic Framework for Prosperity.

Characteristics

- Issue-based cooperation.
- Flexible partnership structures.
- Independent foreign policy choices.
- Avoidance of exclusive alliance commitments.

Continuity with India's Diplomatic Tradition

- Strategic flexibility represents a modern expression of strategic autonomy.

iv. Strategic Expansion: Looking Beyond Traditional Regions

Strategic expansion reflects India's efforts to engage emerging centres of economic and geopolitical importance.

Africa as a Strategic Priority

- Africa has emerged as a critical region due to its demographic, economic and geopolitical significance.

Why Africa Matters

Dimension	Strategic Importance
Energy Security	Oil and gas resources
Critical Minerals	Lithium, cobalt and rare earth elements

Trade	Rapidly growing markets
Maritime Security	Indian Ocean connectivity
Global Governance	Support in multilateral institutions

Emerging Strategic Competition

Africa is increasingly attracting attention from:

- China.
- European powers.
- Gulf countries.
- The United States.

Strategic Imperative for India

- Move beyond symbolic engagement.
- Expand investments and connectivity.
- Strengthen development partnerships.
- Deepen defence cooperation.

v. Domestic Renewal: The Foundation of External Influence

Domestic renewal recognises that foreign policy effectiveness depends fundamentally on internal capabilities.

Pillars of Domestic Strength

- Economic growth.
- Technological innovation.
- Industrial competitiveness.
- Human capital development.
- Defence preparedness.
- Political and institutional stability.

Comprehensive National Power

Comprehensive National Power reflects the aggregate strength derived from:

- Economic capacity.
- Military capability.
- Technological leadership.
- Institutional effectiveness.
- Social resilience.

e. Significance of the Five Principles

Facilitating Multipolar Engagement

- Simultaneous engagement with diverse partners.
- Avoidance of exclusive alliances.
- Greater diplomatic reach.

Preserving Strategic Autonomy

- Independent security decisions.

- Flexible economic partnerships.
- Sovereign technology choices.

Reducing Strategic Vulnerabilities

- Resilient supply chains.
- Reduced technological dependence.
- Better protection from geopolitical disruptions.

Expanding India's Global Role

- Leading power rather than merely a balancing power.
- Voice of the Global South.
- Bridge between developed and developing countries.
- Advocate of global governance reform.

f. Challenges Before Indian Diplomacy

i. Geopolitical Pressures

Major Strategic Challenges

- United States–China rivalry.
- Russia–West tensions.
- Instability in West Asia.
- Indo-Pacific maritime competition.

Policy Challenge

- Maintaining balanced relationships amidst competing expectations.

ii. Economic Constraints

- Protectionist tendencies.
- Trade fragmentation.
- Supply-chain realignments.

iii. Technological Competition

- Semiconductors.
- Artificial Intelligence.
- Critical minerals.
- Advanced manufacturing technologies.

iv. Domestic Limitations

- Infrastructure gaps.
- Skill shortages.
- Bureaucratic inefficiencies.
- Manufacturing constraints.

g. Non-Alignment and Multi-Alignment: A Comparative Perspective

Non-Alignment

Emerged during the Cold War

Multi-Alignment

Operates in a multipolar environment

Sought distance from rival blocs	Engages with multiple centres of power
Influenced by ideological considerations	Guided primarily by national interests
Emphasised neutrality	Emphasises flexibility and strategic autonomy

Key Observation

- The shift represents adaptation rather than abandonment.
- Strategic autonomy remains the central objective.
- Policy instruments have evolved to suit contemporary realities.

h. Way Forward

Deepen Strategic Partnerships

- Gulf countries.
- European partners.
- Indo-Pacific democracies.
- African nations.
- The wider Global South.

Accelerate Economic Transformation

- Manufacturing competitiveness.
- Infrastructure development.
- Logistics efficiency.
- Innovation ecosystems.

Build Technological Leadership

- Semiconductors.
- Artificial Intelligence.
- Critical minerals.
- Green technologies.

Expand Development Partnerships

- Capacity building.
- Infrastructure development.
- South-South cooperation.
- Development finance.

Preserve Strategic Autonomy

- Continue pursuing flexible, interest-based diplomacy while avoiding excessive dependence on any single partner or bloc.

i. Critical Evaluation

Strengths of India's Approach

- High diplomatic flexibility.
- Diversified partnerships.
- Reduced strategic dependence.
- Enhanced global relevance.

- Greater policy autonomy.

Limitations

- Resource and capacity constraints.
- Managing competing partner expectations.
- Persistent technological dependencies.
- Need for faster domestic reforms.
- Vulnerability to prolonged geopolitical instability.

Conclusion

India's diplomacy is increasingly shaped by the recognition that the emerging world order is neither unipolar nor bipolar but complex, competitive and multipolar. The principles of reciprocity, diversification, strategic flexibility, strategic expansion and domestic renewal together provide a coherent framework for navigating this uncertainty. However, the ultimate success of Indian foreign policy will depend upon its ability to convert diplomatic opportunities into economic, technological and strategic capabilities at home. In the twenty-first century, external influence and internal strength are inseparable dimensions of national power.

GS Paper III: Environment

2. Managing Human-Wildlife Conflict: Towards Coexistence and Sustainable Conservation

a. Introduction

Human-Wildlife Conflict (HWC) has emerged as one of India's most significant environmental, developmental and governance challenges. Rising encounters involving elephants, tigers, leopards, bears, wild boars and monkeys have exposed the limitations of conventional conflict-mitigation strategies. Policymakers increasingly recognise that sustainable solutions lie not merely in controlling wildlife movement but in promoting coexistence through ecological restoration, community participation and landscape-level conservation.

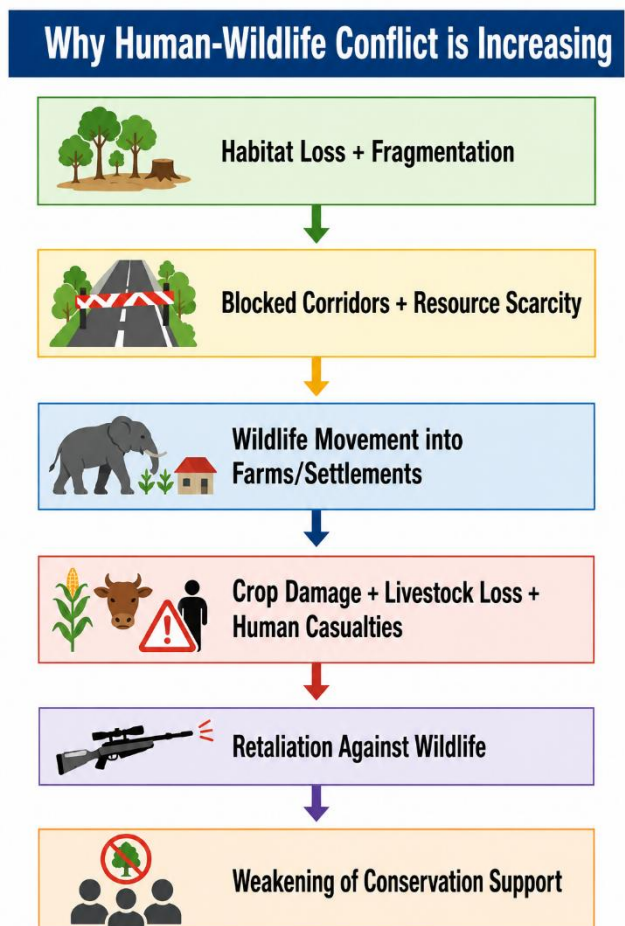
The issue today extends beyond wildlife conservation and reflects broader tensions between economic development, ecological sustainability and local livelihoods.

b. Understanding Human-Wildlife Conflict

Meaning and Nature

- Human-Wildlife Conflict refers to interactions between humans and wild animals that result in adverse impacts on either side.

Manifestations of Human-Wildlife Conflict



- Loss of human life and injuries.
- Crop damage and economic losses.
- Livestock depredation.
- Property destruction.
- Retaliatory attacks on wildlife.

Beyond Isolated Incidents

- Conflicts are often symptoms of deeper ecological stress.
- They reflect pressures arising from land-use change and habitat degradation.
- They indicate growing competition between humans and wildlife for resources.

c. Constitutional and Governance Context

Constitutional Foundations

The challenge of Human-Wildlife Conflict intersects with environmental protection, local governance and sustainable development.

Constitutional Provision	Relevance
Article 48A	Directs the State to protect and improve the environment and safeguard forests and wildlife.
Article 51A(g)	Imposes a fundamental duty on citizens to protect the natural environment.
Fifth and Sixth Schedule Areas	Recognise the role of local communities in managing natural resources.
73rd Constitutional Amendment	Enables Panchayats to participate in environmental governance and natural resource management.

Governance Significance

- Wildlife conservation is a shared responsibility between governments and communities.
- Local institutions play a crucial role in resource management.
- Sustainable conservation requires participatory governance.

d. Why is Human-Wildlife Conflict Increasing?

i. Habitat Fragmentation and Loss of Ecological Connectivity

Rapid infrastructure expansion has fragmented wildlife habitats across India.

Major Drivers of Fragmentation

- Roads and highways.
- Railway networks.
- Mining projects.
- Transmission lines.
- Urban expansion.

Consequences

- Creation of isolated habitat patches.
- Increased animal movement through human settlements.
- Greater frequency of human-wildlife encounters.
- Disruption of traditional migratory routes.

Impact on Migratory Species

- Elephants are particularly affected due to dependence on traditional corridors.
- Corridor obstruction increases crop-raiding incidents.
- Human casualties often rise along fragmented landscapes.

ii. Expansion of Agriculture

Agriculture increasingly extends into forest fringes and wildlife habitats.

Why Wildlife Enters Agricultural Lands

- Crops provide abundant and nutritious food.
- Agricultural landscapes are easier to access than forests.
- Human-modified ecosystems attract opportunistic species.

Species Commonly Involved

- Elephants.
- Wild boars.
- Nilgai.
- Monkeys.

iii. Declining Availability of Natural Resources

Many forest ecosystems are under stress due to degradation and climate variability.

Key Ecological Pressures

- Habitat degradation.
- Invasive species.
- Overexploitation of resources.
- Climate-induced ecosystem changes.

Consequences

- Wildlife moves outside forests in search of food and water.
- Carnivores increasingly prey on livestock.
- Competition for resources intensifies.

iv. Urbanisation and Peri-Urban Expansion

Urban growth is extending into wildlife habitats.

Emerging Trends

- Expansion of settlements near forests.
- Increased interaction between humans and wildlife.
- Emergence of peri-urban conflict zones.

Examples

- Leopard sightings near urban centres.

- Monkey populations thriving in cities.
- Wildlife movement through suburban landscapes.

e. Human-Wildlife Conflict: An Ecological Perspective

Conflict as a Symptom of Ecological Imbalance

A critical insight is that Human-Wildlife Conflict is often not the root problem but a manifestation of broader ecological disruptions.

Adaptive Nature of Wildlife Behaviour

- Wildlife responds to changing environmental conditions.
- Animals seek food, water and shelter necessary for survival.
- Most conflict situations arise from ecological pressures rather than aggression.

Illustrative Examples

- Elephants raid crops due to blocked migratory corridors.
- Tigers and leopards attack livestock when wild prey declines.
- Monkeys exploit food sources created by tourism and human settlements.

Human-Wildlife Conflict is fundamentally a land-use, development and governance challenge as much as it is a conservation challenge.

f. Nature and Extent of Human-Wildlife Conflict in India

Dimension	Current Situation
Human Casualties	Hundreds of deaths annually, especially from elephant encounters
Crop Damage	Significant losses caused by elephants, wild boars, monkeys and nilgai
Livestock Depredation	Common in tiger, leopard and wolf landscapes
High-Risk States	Assam, Karnataka, Kerala, Odisha, Uttarakhand and West Bengal
Major Species Involved	Elephants, Tigers, Leopards, Bears, Wild Boars and Monkeys

Social and Economic Impact

- Rural communities bear disproportionate costs.
- Livelihood insecurity increases near forest landscapes.
- Conservation support may weaken when losses remain uncompensated.

g. International Best Practices

i. Community-Based Conservation in Southern Africa

Countries such as Botswana and Namibia have adopted community-led conservation models.

Key Features

- Revenue-sharing through ecotourism.
- Community participation in conservation.

- Sustainable resource management initiatives.

Lesson for India

- Conservation becomes more effective when local communities are stakeholders rather than passive beneficiaries.

ii. Ecological Corridor-Based Planning in Costa Rica

Costa Rica integrates wildlife corridors into national land-use planning.

Benefits

- Maintains habitat connectivity.
- Reduces encounters with human settlements.
- Supports landscape-scale conservation.

Lesson for India

- Conservation planning must extend beyond protected areas.

iii. Monitoring and Compensation Systems in Finland

Finland has developed efficient monitoring and compensation frameworks.

Key Features

- Real-time wildlife monitoring.
- Prompt compensation mechanisms.
- Strong institutional trust.

Lesson for India

- Fair and timely compensation promotes public acceptance of conservation measures.

h. India's Existing Response Framework

i. Legal and Institutional Mechanisms

Initiative	Objective
Wildlife Protection Act, 1972	Legal framework for wildlife conservation
Project Tiger	Protection of tiger habitats and landscapes
Project Elephant	Conservation of elephant populations and corridors
National Wildlife Action Plan	Strategic direction for wildlife conservation
CAMPA Funds	Habitat restoration and ecological improvement

ii. Current Mitigation Measures

Existing Interventions

- Compensation schemes.

- Solar and physical fencing.
- Early warning systems.
- Radio-collaring and tracking.
- Rapid response teams.
- Awareness campaigns.

Limitation

- Most interventions remain reactive rather than preventive.

i. Key Challenges in India's Approach

i. Delays in Compensation

Major Issues

- Procedural complexity.
- Delayed disbursement.
- Inadequate valuation of losses.

Consequences

- Livelihood distress.
- Increased resentment towards wildlife conservation.
- Erosion of public trust.

ii. Fragmentation of Wildlife Habitats

Infrastructure-Related Challenges

- Roads through wildlife corridors.
- Railway projects intersecting habitats.
- Expansion of mining and industrial projects.

Ecological Consequences

- Reduced habitat connectivity.
- Increased wildlife mortality.
- Intensification of Human-Wildlife Conflict.

iii. Limited Community Participation

Existing Imbalance

- Communities bear conservation costs.
- Benefits often remain limited.
- Decision-making remains largely state-driven.

Impact

- Weakens local support for conservation.
- Reduces effectiveness of interventions.

iv. Predominance of Reactive Strategies

Current Focus

- Responding after incidents occur.
- Emphasis on containment rather than prevention.

Need for Reform

- Habitat restoration.
- Better land-use planning.
- Long-term ecosystem management.

j. Climate Change and Emerging Risks

i. Resource Scarcity

Climate Impacts

- Changing rainfall patterns.
- Prolonged droughts.
- Ecosystem degradation.

Consequences

- Reduced food availability.
- Water scarcity within forests.
- Increased wildlife movement into human areas.

ii. Altered Species Distribution

- Species shifting beyond traditional ranges.
- New conflict hotspots emerging.
- Increased interactions with human populations.

iii. Intensified Competition

Areas of Competition

- Land resources.
- Water resources.
- Biological resources.

Policy Implication

- Climate adaptation and wildlife conservation must be integrated.

k. Towards Human-Wildlife Coexistence

i. Securing Wildlife Corridors

Importance of Corridors

- Maintain ecological connectivity.
- Facilitate safe animal movement.
- Reduce conflict incidents.

Policy Priorities

- Corridor identification.
- Legal protection.
- Integration into infrastructure planning.

ii. Adopting a Landscape-Level Conservation Approach

- Moves beyond protected-area boundaries.
- Recognises multi-use landscapes.
- Integrates ecological and developmental objectives.

iii. Strengthening Community-Based Conservation

Key Measures

- Ecotourism revenue-sharing.
- Community stewardship programmes.
- Local conservation funds.
- Participatory decision-making.

Benefits

- Enhances local ownership.
- Improves conservation outcomes.
- Converts wildlife from liability to asset.

iv. Reforming Compensation Systems

- Time-bound.
- Transparent.
- Technology-enabled.
- Adequately funded.

v. Leveraging Technology

Technological Solutions

- AI-based early warning systems.
- GPS tracking and telemetry.
- Drone-assisted monitoring.
- Real-time conflict mapping.

Guiding Principle

- Technology should complement community participation rather than replace it.

vi. Climate-Resilient Conservation

- Habitat restoration.
- Water augmentation.
- Ecosystem resilience-building.

vii. Awareness and Environmental Education

- Promotes ecological literacy.
- Encourages behavioural change.
- Strengthens coexistence culture.

Conclusion

Human-Wildlife Conflict represents one of the clearest manifestations of the tension between development and ecological sustainability. As habitats shrink, infrastructure expands and climate pressures intensify, traditional conflict-management approaches will become increasingly inadequate. The future of conservation lies in securing ecological connectivity, empowering local communities, strengthening compensation systems and adopting landscape-level planning. Ultimately, successful wildlife conservation depends not on eliminating all conflict but on creating conditions where humans and wildlife coexist in a manner that is socially just, economically viable and ecologically sustainable.

GS Paper III: Disaster Management

3. Addressing India's Electrical Fire Risks Amid Rising Power Demand

a. Introduction

The tragic fire at Delhi's Vivek Vihar in May 2026, which claimed nine lives, has brought renewed attention to the growing threat of electrical fires in India. The incident coincided with record electricity demand reaching 256.11 GW amid severe heatwaves and rapidly rising air-conditioner usage. The issue highlights the intersection of urbanisation, climate adaptation, infrastructure quality, energy security and disaster preparedness.

As India undergoes rapid electrification and expands its cooling infrastructure, electrical safety is emerging as a critical component of urban resilience and sustainable development.

b. Understanding Electrical Fires

Meaning and Nature

An electrical fire is a fire caused by failures, defects or unsafe conditions within electrical systems and equipment.

Common Causes of Electrical Fires

- Short circuits.
- Overloaded circuits.
- Arc faults.
- Ground faults.
- Loose electrical connections.
- Deteriorated wiring.
- Malfunctioning electrical appliances.

Growing Relevance

- Rising electrification is increasing electrical loads.
- Household energy consumption is expanding rapidly.
- Electrical safety has become central to disaster risk reduction.

c. India's Emerging Cooling Revolution

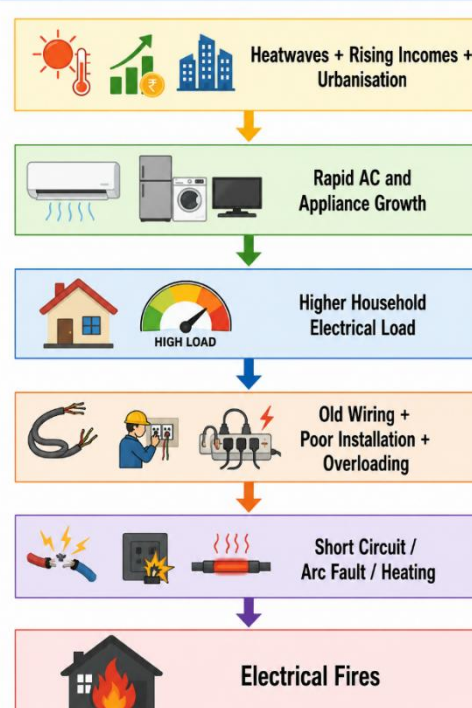
Transformation in Household Energy Consumption

India is witnessing a significant shift in energy-use patterns driven by rising incomes, urbanisation, climate change and increasing aspirations for thermal comfort.

Cooling is increasingly becoming a necessity rather than a luxury, especially during prolonged heatwaves.

Indicator	Status
Peak Electricity Demand (2026)	256.11 GW
Cooling Demand at Peak	Approximately 50 GW

Why Electrical Fire Risks Are Rising in India



Expected Cooling Demand by 2035	Approximately 180 GW
Air Conditioner Sales (2025)	15.4 million units
Installed Air Conditioner Base (2024)	93 million units
Projected Air Conditioner Base (2030)	240 million units

Policy Significance

- Reflects India's climate adaptation requirements.
- Increases dependence on electricity infrastructure.
- Creates new safety and reliability challenges.

d. Why Electrical Fire Risks Are Increasing

i. Legacy Electrical Infrastructure

A substantial proportion of India's buildings were designed during periods of relatively low electricity consumption.

Original Design Assumptions

- Lighting and fans.
- Limited household appliances.
- Lower overall electricity demand.

Present-Day Reality

- Air-conditioners.
- Induction cooktops.
- Water heaters.
- Electric vehicle chargers.
- Inverters and digital devices.

Consequences

- Circuit overloading.
- Excessive conductor heating.
- Higher probability of electrical fires.

ii. Growth of Non-Linear Electrical Loads

Modern electronic devices operate differently from traditional resistive loads.

Examples of Non-Linear Loads

- Inverter air-conditioners.
- LED lighting systems.
- Solar inverters.
- UPS systems.
- Electric vehicle chargers.

Impact on Electrical Networks

- Harmonic distortion.
- Excessive heating of conductors.

- Neutral wire stress.
- Increased fire risk.

iii. Air-Conditioners as High-Risk Loads

Air-conditioners have become one of the largest contributors to household electricity demand.

Safety Challenges

- High starting current.
- Long operating durations during summer.
- Connection to circuits not designed for heavy loads.

Risks Generated

- Overheating.
- Insulation failure.
- Arcing.
- Short circuits.

iv. Poor Installation Practices

Many electrical accidents originate from installation defects rather than equipment failure.

Common Deficiencies

- Loose electrical connections.
- Undersized cables.
- Inadequate earthing.
- Poor switchboard termination.
- Counterfeit or substandard products.

Consequences

- Hidden electrical faults.
- Progressive system deterioration.
- Increased fire hazards.

v. Absence of Periodic Safety Inspections

Unlike many developed countries, India lacks a comprehensive framework for regular inspection of domestic electrical systems.

Risks of Non-Inspection

- Ageing wiring remains undetected.
- Insulation degradation accumulates.
- Load increases remain unassessed.
- Hidden hazards persist for years.

e. Major Causes of Electrical Fires

Immediate Cause

Underlying Reason

Short Circuit	Defective wiring or insulation failure
Overloading	Rising electricity demand
Arc Fault	Loose or damaged connections
Ground Fault	Poor installation and maintenance
Equipment Failure	Ageing electrical systems
Neutral Wire Heating	Harmonic distortion

Key Observation

- Immediate causes are often visible.
- Root causes usually involve systemic infrastructure weaknesses.
- Safety failures often result from cumulative neglect rather than isolated events.

f. Harmonic Distortion: An Emerging Infrastructure Challenge

i. Understanding Harmonics

Harmonics are unwanted electrical frequencies generated by modern electronic equipment.

Effects on Power Systems

- Distort normal current flow.
- Reduce power quality.
- Increase electrical stress.

ii. Major Sources of Harmonics

- Inverter air-conditioners.
- LED drivers.
- Solar photovoltaic inverters.
- Electric vehicle charging systems.
- Data centres.
- UPS systems.

iii. Consequences of Harmonic Distortion

- Excessive conductor heating.
- Reduced equipment lifespan.
- Increased risk of electrical fires.
- Lower energy efficiency.
- Grid instability.

Future Significance

- As India's energy transition accelerates, harmonic management will become an essential component of infrastructure safety.

g. Governance and Regulatory Challenges

i. Weak Fire Investigation Capacity

Existing Limitations

- Shortage of specialised fire forensic experts.
- Reliance on preliminary assessments.
- Limited scientific root-cause analysis.

Consequences

- Incomplete understanding of fire causes.
- Weak policy learning.
- Repetition of preventable failures.

ii. Fragmented Data Systems

Information relating to fire incidents is dispersed across multiple institutions.

Agencies Involved

- Fire Services.
- Police Departments.
- National Crime Records Bureau.
- Municipal Authorities.
- Regulatory Bodies.

Challenges

- Lack of integrated datasets.
- Weak risk assessment capacity.
- Evidence-based policymaking becomes difficult.

iii. Enforcement Deficit

India possesses multiple safety regulations and standards.

Existing Frameworks

- National Electrical Code.
- Fire safety regulations.
- Building standards.

Key Problems

- Weak monitoring.
- Inadequate inspections.
- Limited retrofitting of ageing buildings.

Core Challenge

- The issue lies not merely in regulation-making but in effective implementation.

h. International Best Practices

i. Japan

Key Features

- Mandatory periodic inspections.
- Inspection cycles often conducted every four years.
- Strong preventive safety culture.

Lesson for India

- Regular inspections significantly reduce fire risks.

ii. South Korea

Key Features

- Comprehensive safety audits.
- Compliance verification systems.
- Early hazard detection mechanisms.

Lesson for India

- Continuous monitoring is more effective than post-incident responses.

iii. European Union

Emerging Focus Areas

- Heat pumps.
- Solar energy systems.
- Battery storage facilities.
- Electric vehicle charging infrastructure.

Lesson for India

- Safety regulations must evolve alongside technological transitions.

iv. United States

Advanced Technologies

- Arc Fault Circuit Interrupters (AFCIs).
- Intelligent monitoring systems.
- Automated fault detection.

Lesson for India

- Technology can prevent fires before they occur.

i. Significance for India

i. Public Safety

- Electrical fires cause substantial loss of life.
- Property damage remains significant.
- Urban populations face increasing risks.

ii. Urban Resilience

- Safe electrical systems underpin resilient urban infrastructure.
- Essential for Smart Cities initiatives.
- Critical for climate-resilient urban planning.

iii. Energy Transition

Emerging Challenges

- Renewable energy integration.
- Electric mobility expansion.
- Growing digital infrastructure.

Policy Implication

- Electrification must be accompanied by stronger safety frameworks.

j. Way Forward

Establish Mandatory Periodic Electrical Inspections

- Nationwide inspection framework.
- Coverage of residential, commercial and institutional buildings.
- Special focus on solar, battery storage and EV charging systems.

Modernise Building and Electrical Codes

- Arc Fault Circuit Interrupters.
- Smart circuit breakers.
- Harmonic monitoring systems.
- Intelligent fault-detection mechanisms.

Strengthen Fire Forensics

- Dedicated fire forensic laboratories.
- Specialised investigation units.
- Scientific root-cause analysis protocols.

Promote Public Awareness

- Use certified electrical products.
- Avoid circuit overloading.
- Conduct periodic wiring inspections.
- Regularly service high-load equipment.

Develop an Integrated National Fire Database

- Improved risk mapping.
- Better policymaking.
- Enhanced preventive planning.

Encourage Smart Monitoring Technologies

- Smart meters.
- Predictive maintenance systems.
- Thermal monitoring devices.
- Real-time fault detection technologies.

Build Climate-Resilient Energy Infrastructure

- Integrate electrical safety with energy policy.
- Align infrastructure planning with climate adaptation.
- Strengthen resilience against rising cooling demand.

Conclusion

India's rising electricity demand reflects economic growth, urbanisation and increasing resilience to extreme heat. However, this transformation is simultaneously exposing vulnerabilities in ageing electrical infrastructure and safety governance systems. Addressing electrical fire risks requires a transition from reactive emergency response to preventive risk management. Through mandatory inspections, stronger standards, advanced technologies, improved fire forensics and public awareness, India can ensure that its energy transition remains both sustainable and safe. In the coming decades, electrical safety will be as important to national development as electricity access itself.

Reader's Note — About This Current Affairs Compilation

Dear Aspirant,

This document is part of the PrepAlpine Current Affairs Series — designed to bring clarity, structure, and precision to your daily UPSC learning.

While every effort has been made to balance depth with brevity, please keep the following in mind:

1. Orientation & Purpose

This compilation is curated primarily from the UPSC Mains perspective — with emphasis on conceptual clarity, analytical depth, and interlinkages across GS papers.

However, the PrepAlpine team is simultaneously developing a dedicated Prelims-focused Current Affairs Series, designed for:

- factual coverage
- data recall
- Prelims-style MCQs
- objective pattern analysis

This Prelims Edition will be released separately as a standalone publication.

2. Content Length

Some sections may feel shorter or longer depending on topic relevance and news density. To fit your personal preference, you may freely resize or summarize sections using any LLM tool (ChatGPT, Gemini, Claude, etc.) at your convenience.

3. Format Flexibility

The formatting combines:

- paragraphs
- lists
- tables
- visual cues

—all optimised for retention.

If you prefer a specific style (lists → paras, paras → tables, etc.), feel free to convert using any free LLM.

4. Monthly Current Affairs Release

The complete Monthly Current Affairs Module will be released soon, optimized to a compact 100–150 pages — comprehensive yet concise, exam-ready, and revision-efficient.

PrepAlpine