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6. Smart Border Project – Technology-Driven Border Management for India – National

1. Why in News

1. Union Government launching Smart Border Project strengthening India's borders with Pakistan and Bangladesh
2. Using advanced technologies – Drones, radars, modern surveillance cameras
3. India shares 15,106 km land border with seven countries
4. National Hydrographic Office re-assessed India's coastline from 7,516.6 km to 11,098.81 km
5. Smart Border initiative expected to create integrated, technology-driven security grid within a year

2. Border Management

Definition

1. Process through which country controls, manages borders ensuring both security and smooth movement of authorised people, goods
2. Preventing illegal crossings, threats while facilitating legitimate trade, travel with minimal disruption

India's Border Profile

1. **Land border** – 15,106 km with seven countries (Pakistan, China, Bangladesh, Nepal, Bhutan, Myanmar, Afghanistan)
2. **Coastline** – Re-assessed to 11,098.81 km (NHO in coordination with Survey of India per National Security Council Secretariat terms)

3. Importance of Border Management

National Security

1. Prevent infiltration, terrorism, illegal migration
2. Ensuring national security, stability
3. Counter-insurgency, cross-border terrorism prevention

Economic Development

1. Border roads, tunnels, connectivity enabling trade, tourism, reverse migration
2. Turning "remote" villages into "first villages"
3. Economic integration of frontier communities

Strategic Stability

1. Strengthens India's deterrence posture against adversaries
2. Supports rapid military mobilization
3. Conventional and sub-conventional threat management

Community Integration

1. Development of border villages fosters national unity
2. Reduces alienation among frontier populations
3. Prevents radicalization, exploitation

4. Challenges in Border Management

Porous Borders

1. Borders especially along Bangladesh, Nepal, Myanmar creating security challenges
2. Enabling smuggling, illegal migration, human trafficking
3. Easier cross-border movement due to porous nature

Difficult Terrain

1. Himalayas, deserts, dense forests hindering surveillance
2. Infrastructure development challenging in extreme terrain
3. High-altitude, weather-affected regions requiring specialized equipment

Cross-Border Terrorism

1. Persistent infiltration attempts along India-Pakistan border
2. Terror launchpads, funding, training across border
3. Hybrid threats combining conventional and non-conventional tactics

Technological Gaps

1. Need for wider use of AI, UAVs (drones), smart fencing
2. Effectively tackling emerging, evolving threats
3. Existing technology insufficient for vast border areas

Socio-Economic Vulnerabilities

1. Border villages lacking healthcare, education, livelihood opportunities
2. Making them susceptible to exploitation (smuggling networks, anti-national elements)
3. Depopulation of border villages weakening human intelligence

Coordination Issues

1. Multiple agencies (BSF, ITBP, SSB, Assam Rifles, Coast Guard) sometimes facing overlap
2. Coordination challenges between central, state agencies
3. Intelligence sharing gaps

5. Steps Taken by India

Border Infrastructure and Management (BIM) Scheme

1. Central Sector programme (2021-26); outlay ₹13,020 crore
2. **Focus** - Fencing, roads, floodlights, Border Outposts (BOPs), helipads, foot tracks
3. Technology in areas where physical fencing not feasible
4. Strengthening India's international borders comprehensively

Comprehensive Integrated Border Management System (CIBMS)

1. Designed to improve real-time situational awareness
2. Enable quick response along India-Pakistan, India-Bangladesh borders
3. **Integrates** - Manpower, sensors, networks, intelligence, command-and-control systems
4. Strengthen border surveillance, management

Border Area Development Programme (BADP)

1. Aims to improve living conditions in border areas within 10 km of international borders
2. **Provides** - Health, education, roads, water, sanitation, livelihood facilities
3. Coordinated government schemes strengthening border communities

Role of Border Roads Organisation (BRO)

1. Constructs, maintains strategic roads, bridges, tunnels, airfields in border, inaccessible regions
2. Meeting both military, civilian needs
3. **Achievements** -
 1. 64,100+ km roads built
 2. 1,179 bridges constructed

3. 7 tunnels built
4. 22 airfields across border areas, friendly neighboring countries

Extended BSF Jurisdiction

1. BSF jurisdiction extended from 15 km to 50 km (in certain states)
2. Decisions related to land allocation in West Bengal finalized
3. Enhanced operational capacity for border security forces

Digital Connectivity

1. Expanding digital connectivity in rural, remote areas through Bharat Net (funded by Digital Bharat Nidhi)
2. Providing broadband to all Gram Panchayats
3. Amended BharatNet Program upgrading networks, extending to remaining villages
4. Digital governance platforms with offline, multilingual, accessible features
5. Reducing digital divide, ensuring last-mile service delivery

Vibrant Villages Programme

1. **VVP-I (2023)** – Comprehensive development of 662 villages in border blocks along northern frontier
 1. States – Arunachal Pradesh, Himachal Pradesh, Sikkim, Uttarakhand, Ladakh
 2. Infrastructure, livelihood, connectivity development
2. **VVP-II (2025)** – Approved covering 1,954 villages in other international border areas
 1. 15 States, 2 Union Territories
 2. Focuses on overall socio-economic development of border communities

6. About Smart Border Project

Technology Components

1. **Drones** – Aerial surveillance, real-time monitoring of border areas, quick response
2. **Radars** – Long-range detection of infiltrators, movement tracking (ground surveillance radars)
3. **Modern surveillance cameras** – High-resolution, night-vision cameras for continuous monitoring
4. **AI integration** – Pattern recognition, threat identification, automated alerts
5. **Command-and-control centres** – Integrated monitoring, coordination hubs

Target Borders

1. **India-Pakistan border** – Counter-terrorism, infiltration prevention, drug trafficking
2. **India-Bangladesh border** – Illegal migration, human trafficking, smuggling prevention

Expected Outcome

1. Integrated, technology-driven security grid within a year
2. Reducing dependence on physical patrolling in difficult terrain
3. Real-time situational awareness for border forces

7. Way Forward

Expanding AI and Satellite-Based Surveillance

1. AI-powered threat detection reducing human error
2. Satellite imagery for comprehensive border monitoring
3. Unmanned aerial systems (UAS) for persistent surveillance

Improving Border Village Development

1. Health facilities (mobile health units, telemedicine)
2. Education (schools, digital learning)
3. Livelihoods (skill development, local industries)

Strengthening Coordination

1. Unified command structure for border forces
2. Real-time intelligence sharing among security agencies
3. State-central coordination mechanisms

Promoting Smart, Self-Reliant Border Villages

1. Border villages as first line of human intelligence
2. Community participation in border security (Village Defence Guards)
3. Economic development reducing exploitation vulnerability

Enhancing Regional Cooperation

1. Bilateral mechanisms with neighboring countries on border management
2. Information sharing on cross-border crimes
3. Joint patrols, coordinated responses

Building Resilience Against Hybrid Threats

1. Combining physical security with cyber security
2. Countering cyber-physical hybrid threats
3. Electronic warfare capabilities strengthening

8. Conclusion

Smart Border Project launching technology-driven security grid using drones, radars, modern surveillance cameras along India-Pakistan, India-Bangladesh borders represents evolution in India's border management from manpower-dependent to technology-integrated approach. India's 15,106 km land border, re-assessed 11,098.81 km coastline face multifaceted challenges including porous borders (smuggling, illegal migration, human trafficking), difficult terrain (Himalayas, deserts, forests), cross-border terrorism (Pakistan), technological gaps, socioeconomic vulnerabilities in border villages, and coordination issues among multiple agencies. Steps taken include BIM Scheme (₹13,020 crore 2021-26), CIBMS integrating sensors-networks-intelligence, BADP for border community development, BRO building 64,100+ km roads, BSF jurisdiction extended to 50 km, BharatNet digital connectivity, Vibrant Villages Programme-I (662 villages 2023) and II (1,954 villages 2025). Way forward requires expanding AI-satellite surveillance, border village development in health-education-livelihoods, strengthening inter-agency coordination, promoting smart border villages, enhancing regional cooperation, and building resilience against hybrid cyber-physical threats ensuring India's borders remain secure enablers of development, not barriers.

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