

4. Road Map to Build Future-Ready Force – Economy

The Army Chief has unveiled a comprehensive three-phase roadmap to build a future-ready force by 2047, aligning military transformation with India's vision of Viksit Bharat

Introduction

The Indian Army has unveiled a comprehensive transformation roadmap to build a future-ready, technology-driven, self-reliant force by 2047 (India@100). The plan responds to India's rapidly evolving security environment, marked by –

1. Hybrid warfare
2. Cyber and information warfare
3. Gray-zone tactics
4. Disruptive technologies
5. Continued challenges on the northern and western borders

The roadmap is designed as a three-phase, long-term modernization programme, focusing on both capability development and structural reform.

Comprehensive Three-Phase Roadmap

Phase 1 – HOP 2032 (Harnessing Our Potential) – Forms the foundational transformation framework under the Army's "decade of transformation" announced in 2023. Focus areas –

1. Digitisation and network-centric warfare
2. Organizational restructuring, including integrated battle groups (IBGs)
3. Initial adoption of AI, autonomous systems, drones, and space-based assets
4. Logistics automation and smart supply-chain systems

Objective – Build the base infrastructure and technological foundation for deeper reforms.

Phase 2 – STEP 2037 (Sustain, Transform, Enhance, Progress) – A **five-year consolidation phase** that builds on the gains of HOP 2032. Focus areas –

1. Scaling successful pilots across formations
2. Operationalising jointness with IAF and Navy
3. Expanding quantum communication, secure networks, and cyber resilience
4. Standardising new doctrines for multi-domain operations

Objective – Institutionalisation, ensuring reforms are embedded in training, structures, and force culture.

Phase 3 – JUMP 2047 (Joint, Unified, Modern, Progressive) The **culmination phase**, under which the Army aims to become an integrated, fully future-ready force by 2047. Focus areas –

1. Large-scale integration of AI-enabled autonomous platforms
2. Human-machine teaming (robotics + soldiers)
3. Advanced space-based ISR (Intelligence, Surveillance, Reconnaissance)
4. Fully networked battlefield transparency
5. Deeper jointness via Integrated Theatre Commands (ITCs)

Objective – A globally competitive, technologically superior, indigenously equipped Army aligned with India's great-power aspirations.

Four "Springboards" Driving the Transformation

Self-Reliance Through Indigenisation – Emphasis on **Atmanirbhar Bharat** for defence –

1. Local manufacturing of artillery, UAVs, armoured systems, radars
2. Enhanced procurement from DPSUs, MSMEs, start-ups
3. Technology absorption through DRDO, IDEX, academia

Focus – Reduce import dependence and create a resilient Indian defence ecosystem.

Accelerated Innovation – Moving beyond pilot projects to deployment at scale in –

1. Artificial Intelligence (AI)
2. Cyber warfare and Big Data analytics
3. Quantum communication and encryption
4. Swarm drones and autonomous systems
5. Space-based technologies
6. 3D-printed parts and advanced materials

Goal – Build decisive technological edges against adversaries adopting similar capabilities.

Adaptation and Ecosystem Reform – Structural reforms to ensure the Army adapts to next-generation warfare –

1. Flexible, modular combat groups replacing rigid formations
2. Integrated multi-domain formations
3. New operational doctrines for contested borders and hybrid threats
4. Faster procurement mechanisms

Aim – A modern force that is agile, responsive, and strategically aligned with new realities.

Military-Civil Fusion – Deepening synergy between defence and civilian sectors –

1. Opening firing ranges and labs to universities
2. Funding start-ups under iDEX and other schemes
3. Collaboration with IITs, NITs, and private R&D labs
4. Participation in national technology initiatives (AI, space, cyber)

Purpose – Build a vibrant innovation ecosystem supporting defence needs.

Objective and Need for the Roadmap

Evolving Threat Landscape – Emergence of –

1. Hybrid warfare that blends military, cyber, information, and economic tools
2. Cyber-attacks targeting military networks
3. Drone warfare and precision munitions
4. Space-based surveillance and communication threats

India must adapt to adversaries using cyber-space-AI-enabled strategies.

Geopolitical Strains and Border Realities – Long-term challenges with China and Pakistan Need for enhanced mountain warfare and rapid mobilisation capabilities Requirement for surveillance and deterrence across high-altitude frontiers

Technological Disruption – Rise of –

1. Autonomous weapon systems (AWS)
2. Multi-domain operations (MDO)
3. Electronic and information warfare

Necessitates rapid capability enhancement.

Push for Defence Self-Reliance – Alignment with –

1. Atmanirbhar Bharat
2. Defence Production & Export Promotion Policy (DPEPP)
3. Mission DefSpace

Reducing costly imports while enhancing national security resilience.

Key Challenges to Modernisation

Resource Constraints – Defence modernisation requires large capital expenditure. Balancing fiscal discipline with procurement needs remains complex.

Technology Gaps – India still lags in –

1. Advanced sensors
2. High-end UAV engines
3. Quantum communication systems
4. Next-generation armoured platforms

Domestic industry is improving, but gaps remain significant.

Operational and Structural Challenges – Integrating new systems without disrupting operational readiness. Managing transition from legacy to network-centric platforms. Complexities in unifying tri-service operations.

Human Capital & Training Needs – New warfare domains require –

1. Cyber specialists
2. Electronic warfare experts
3. Remote-piloted vehicle operators
4. Space operations personnel

Need for continuous reskilling within the Army.

Way Ahead

Structural Reforms – Move towards leaner, technology-enabled formations. Implementation of Integrated Theatre Commands. Modern logistics and supply chains.

Civil-Military-Industrial Partnerships – Leveraging –

1. Indian private sector
2. Start-ups
3. Academic institutions
4. Defence clusters (UP, TN, Gujarat corridors)

Creating a sustainable defence R&D base.

Long-Term Investments in R&D – Increased funding for –

1. Mission Mode DRDO programmes
2. Quantum, AI, and space-based capabilities
3. Joint research with foreign partners under strategic agreements

Vision for 2047 – Build a future-ready, resilient, multi-domain force by India@100. Strengthen capability to –

1. Protect territorial sovereignty
2. Respond to hybrid and high-technology threats
3. Support India's rise as a global power and net security provider in the Indo-Pacific.

Source – <https://www.thehindu.com/news/national/army-chief-charts-three-phase-plan-to-build-future-ready-force-by-2047/article70331613.ece>