

ROLE OF AI IN BUILDING A VIKSIT BHARAT BY 2047

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ABSTRACT

The vision of Viksit Bharat 2047 seeks to transform India into a developed, inclusive, prosperous, technologically advanced and environmentally sustainable nation by the centenary of its independence. Artificial intelligence has emerged as a powerful general-purpose technology capable of accelerating this transformation. AI can improve productivity, strengthen public administration, expand access to healthcare and education, modernize agriculture and manufacturing, support scientific discovery and enable evidence-based policymaking. However, AI cannot independently create a developed nation. Its contribution will depend on complementary investments in human capital, digital and physical infrastructure, research, institutional capacity, data governance and social protection.

This paper examines the role of AI in building Viksit Bharat by 2047 through a qualitative review of government strategies, international policy frameworks and research literature. It analyses AI applications in agriculture, healthcare, education, manufacturing, financial services, governance, infrastructure, climate action, employment, defence and scientific research. It also evaluates risks arising from algorithmic bias, privacy violations, misinformation, cybersecurity threats, labour-market disruption, digital exclusion and technological dependence. The paper argues that India should follow a human-centred and development-oriented AI strategy in which technology augments rather than replaces human capabilities. It proposes a three-stage roadmap covering foundational development from 2026 to 2030, nationwide scaling from 2030 to 2040 and global AI leadership from 2040 to 2047. The study concludes that responsible, multilingual, affordable and inclusive AI can become a decisive instrument for achieving Viksit Bharat, provided that its benefits are distributed equitably and its use remains accountable to constitutional values.

Keywords: Artificial intelligence, Viksit Bharat 2047, IndiaAI Mission, inclusive development, digital public infrastructure, economic growth, responsible AI, innovation, employment, public governance

1. INTRODUCTION

Viksit Bharat 2047 represents India's national aspiration to become a developed country by the one-hundredth anniversary of independence. The vision is not limited to an increase in gross domestic product. It includes inclusive growth, high-quality employment, modern infrastructure, universal access to essential services, technological self-reliance, environmental sustainability, effective institutions and improved quality of life. The Government of India has described the vision as a collective effort to build an inclusive and progressive nation, while the World Bank characterises India's long-term development aspiration as achieving high-middle-income status by 2047.

Achieving this transformation within two decades will require substantial improvements in productivity, human capabilities, public-service delivery and innovation. India must simultaneously address structural challenges such as rural distress, learning gaps, healthcare shortages, unemployment, informality, urban congestion, environmental degradation and regional inequality. Traditional development approaches alone may not be sufficient to produce the scale and speed of change required.

Artificial intelligence offers a new set of capabilities for addressing these challenges. AI systems can analyse large datasets, identify patterns, make predictions, automate routine processes, generate content, understand natural language and support decision-making. They can help doctors interpret medical images, farmers detect crop diseases, teachers personalise instruction, factories reduce equipment failures and governments identify gaps in programme implementation.

Recognising this potential, India adopted the National Strategy for Artificial Intelligence in 2018, centred on the idea of "AI for All." The strategy identified healthcare, agriculture, education, smart cities and mobility as priority areas and emphasised research, workforce development, adoption and responsible governance. India subsequently approved the IndiaAI Mission with an outlay of approximately ₹10,372 crore to strengthen compute capacity, datasets, indigenous models, applications, skills, startup financing and safe and trusted AI.

By March 2026, more than 38,000 graphics processing units had reportedly been onboarded under the common compute facility. The mission had also approved applications addressing Indian challenges and supported the development of indigenous foundation models and AI talent. These developments indicate that India is moving from broad policy formulation towards the creation of operational AI infrastructure.

Nevertheless, infrastructure alone will not guarantee positive development outcomes. AI can increase productivity and expand access, but it can also reproduce discrimination, displace workers, concentrate economic power, violate privacy and amplify misinformation. The central policy question is therefore not whether India should adopt AI, but how AI can be developed and governed so that it advances economic progress, social justice and constitutional values.

2. MEANING AND SCOPE OF ARTIFICIAL INTELLIGENCE

Artificial intelligence refers to computational systems capable of performing functions normally associated with human intelligence, including perception, language understanding, learning, reasoning, prediction, decision-making and problem-solving. AI includes several interconnected technologies:

- Machine learning and deep learning;
- Natural-language processing;

- Computer vision;
- Speech recognition and synthesis;
- Robotics and autonomous systems;
- Predictive analytics;
- Expert and recommendation systems;
- Generative AI and large language models;
- Digital twins and intelligent agents.

Traditional AI systems generally classify information, recognise patterns or predict outcomes. Generative AI can produce new text, images, audio, video and computer code. Agentic AI can execute multi-step tasks with limited supervision. These technologies create opportunities for both automation and augmentation.

Automation occurs when AI performs tasks previously completed by humans.

Augmentation occurs when AI assists people in completing tasks more accurately, rapidly or effectively. For a labour-abundant country such as India, augmentation is often more developmentally desirable than unrestricted replacement. The purpose of AI policy should therefore be to raise the capabilities of farmers, workers, teachers, nurses, administrators and entrepreneurs rather than merely reducing the number of people employed.

3. REVIEW OF LITERATURE AND POLICY CONTEXT

3.1 National Strategy for Artificial Intelligence

NITI Aayog's 2018 strategy viewed AI as an instrument for inclusive development and proposed that India concentrate on socially relevant applications. It recommended centres of research excellence, mechanisms for workforce reskilling, improved access to datasets, greater public-private collaboration and responsible-AI standards. It also recognised that government must act as a catalyst by supporting infrastructure, creating demand and facilitating partnerships.

The strategy's importance lies in its developmental orientation. Rather than treating AI exclusively as a commercial technology, it connected AI with healthcare, agriculture, education, mobility and public services. This approach is directly relevant to Viksit Bharat because development requires both economic productivity and wider social capabilities.

3.2 Responsible AI for All

NITI Aayog's responsible-AI framework identified seven major principles: safety and reliability, equality, inclusivity and non-discrimination, privacy and security, transparency, accountability and the protection of positive human values. It warned that opaque systems, biased data and unaccountable automated decisions could exclude citizens from essential services.

These principles establish an important link between AI governance and the Constitution of India. AI used by government agencies should comply with equality, dignity, liberty and procedural fairness. A welfare application cannot be considered successful merely because it is technically efficient; it must also be accessible, explainable and open to appeal.

3.3 IndiaAI Mission

The IndiaAI Mission seeks to create a comprehensive national ecosystem through seven major pillars:

1. IndiaAI Compute Capacity;
2. IndiaAI Innovation Centre;
3. IndiaAI Datasets Platform or AIKosh;
4. IndiaAI Application Development Initiative;
5. IndiaAI FutureSkills;
6. IndiaAI Startup Financing;
7. Safe and Trusted AI.

The mission is designed to reduce entry barriers faced by researchers, academic institutions, startups and smaller enterprises. Shared computing infrastructure and curated datasets are especially important because the high cost of advanced computing can otherwise concentrate AI development in a few large companies.

3.4 Economic Potential

NITI Aayog's 2025 AI roadmap argues that India needs sustained productivity-led growth to achieve its long-term development ambition. Its scenario analysis estimates that accelerated AI adoption across industries could contribute approximately US\$500–600 billion above India's baseline growth by 2035. It also estimates that AI-led frontier innovation may contribute an additional US\$280–475 billion by that year. These are projections rather than guaranteed outcomes and depend on complementary reforms, investment and implementation.

The same analysis identifies manufacturing and financial services as major areas of opportunity. In manufacturing alone, AI-led productivity and efficiency improvements could potentially generate US\$85–100 billion above baseline growth by 2035 through predictive maintenance, process optimisation, improved yields, quality control and intelligent product design.

3.5 AI, Productivity and Employment

International evidence suggests that AI can increase worker productivity, although the benefits vary considerably across occupations and skill levels. A study involving more than 5,000 customer-service employees found that access to a generative-AI assistant increased average productivity, with particularly strong gains for less experienced workers. This indicates that AI can help distribute expert knowledge and accelerate workplace learning.

At the same time, the International Monetary Fund warns that AI will affect jobs through both substitution and complementarity. Some activities will be automated, while others will become more productive through human–AI collaboration. Emerging and developing economies may initially have lower occupational exposure than advanced economies, but weaknesses in infrastructure and skills can prevent them from capturing AI's benefits.

Research on Indian job advertisements has recorded rapid growth in employer demand for AI-related skills, particularly in services. However, this growth has been uneven, concentrated among particular firms, cities and high-skill occupations. Consequently, AI policy must extend beyond producing elite engineers and should include mass AI literacy, vocational transformation and continuous reskilling.

4. OBJECTIVES OF THE STUDY

The main objective of this study is to examine how artificial intelligence can contribute to the achievement of Viksit Bharat by 2047.

The specific objectives are:

1. To analyse the potential contribution of AI to economic growth and productivity.
2. To examine the role of AI in agriculture, healthcare, education, manufacturing and public governance.
3. To evaluate AI's implications for employment, skills and social inclusion.
4. To identify ethical, legal, technological and institutional challenges.
5. To recommend a responsible and inclusive AI-development framework.
6. To propose a phased AI roadmap for India up to 2047.

5. RESEARCH METHODOLOGY

The study follows a **qualitative, descriptive and analytical research design**. It is based on secondary information drawn from:

1. Government of India policy documents and legislation;
2. NITI Aayog reports;
3. IndiaAI Mission publications;
4. World Bank, IMF, OECD, UNESCO and WHO reports;
5. Peer-reviewed and working-paper literature;
6. Official publications on digital governance and sectoral AI adoption.

The study uses thematic analysis to classify AI's contribution into economic, social, institutional and environmental dimensions. It also applies a policy-gap approach by comparing development opportunities with the infrastructure, skills, regulation and governance required to realise them.

No original survey, experiment or econometric estimation was undertaken. Economic figures reported in the paper are projections from cited institutional sources and should not be interpreted as guaranteed outcomes.

6. AI AS A DRIVER OF ECONOMIC GROWTH AND PRODUCTIVITY

Economic development depends on the ability of a country to produce more valuable goods and services with available labour, capital and natural resources. AI can raise productivity by improving forecasting, reducing errors, optimising production processes and supporting faster decision-making.

Businesses can use AI to:

- Forecast demand and manage inventories;
- Reduce equipment downtime;
- Automate documentation and routine administration;
- Improve product design;
- Identify defects;

- Optimise logistics;
- Detect fraud;
- Personalise services;
- Support research and development;
- Expand customer access through multilingual interfaces.

AI can be particularly valuable to micro, small and medium enterprises. Many MSMEs lack specialised departments for accounting, marketing, legal compliance, design and technology. Affordable AI services could provide small enterprises with virtual business assistants, automated bookkeeping, translation, market analysis and quality-control tools.

However, the productivity benefits of AI will not emerge automatically. Firms must redesign workflows, train employees and maintain high-quality data. Installing AI without organisational transformation can generate inaccurate output, employee resistance and additional compliance costs. India should therefore focus on AI diffusion, not merely AI invention. The benefits must reach factories, farms, hospitals, schools, local governments and small businesses rather than remaining concentrated in technology companies.

7. ROLE OF AI IN MAJOR SECTORS

7.1 Agriculture and Rural Development

Agriculture remains central to rural livelihoods and food security. Farmers face unpredictable weather, water scarcity, crop disease, input-price volatility, fragmented landholdings and limited access to expert advice. AI can provide location-specific information by integrating satellite images, soil data, weather records, crop conditions and market information.

Major applications include:

- Early detection of crop pests and diseases;
- Crop and yield forecasting;
- Precision irrigation and fertiliser application;
- Soil-health analysis;
- Weather and disaster warnings;
- Livestock-health monitoring;
- Automated grading of agricultural produce;
- Price and market-demand forecasting;
- Agricultural credit and insurance assessment;
- Local-language advisory services.

AI-enabled mobile and voice applications can make agricultural knowledge available to farmers who cannot easily access extension officers. Multilingual systems are essential because text-only applications may exclude farmers with limited literacy or those speaking regional languages.

The Government of India has highlighted AI applications in crop monitoring, rural healthcare, education, disaster

management and public services as part of the wider Viksit Bharat agenda. Nevertheless, rural AI systems must use locally representative data and provide clear human support when recommendations fail.

AI must not be treated as a replacement for irrigation, storage, roads, markets, agricultural research or extension services. Its role is to improve the effectiveness of these systems. A farmer cannot benefit from a crop-price prediction if there is no accessible market, storage facility or transport connection.

7.2 Healthcare

India faces uneven distribution of doctors, specialists, laboratories and healthcare infrastructure. Rural and remote communities frequently experience delays in screening, diagnosis and referral. AI can support healthcare professionals by interpreting diagnostic images, identifying high-risk patients, assisting clinical documentation and enabling remote monitoring.

Potential applications include:

- Detection of tuberculosis, cancers and eye diseases;
- Maternal and child-health risk assessment;
- Clinical decision-support systems;
- Remote radiology and pathology;
- Hospital-bed and staff planning;
- Drug discovery and clinical research;
- Disease-surveillance systems;
- Supply-chain management for medicines and vaccines;
- Public-health forecasting;
- Multilingual patient-assistance systems.

AI can improve access, but it should not independently make critical medical decisions without qualified human supervision. Medical datasets may underrepresent rural populations, women, tribal communities or patients with uncommon conditions. Poor-quality models can therefore produce unsafe recommendations.

The WHO emphasises that AI for health must protect autonomy, safety, transparency, accountability, equity and sustainability. Ethical and human-rights safeguards should be incorporated throughout the design and deployment process.

India's health-sector AI strategy should require clinical validation, local testing, cybersecurity protections, patient consent, audit trails and mechanisms for reporting adverse events. AI should strengthen doctors, nurses, pharmacists and community health workers rather than weaken professional accountability.

7.3 Education and Skill Development

A developed India requires universal access to high-quality education and a workforce capable of adapting to technological change. AI can help address teacher shortages, language diversity and differences in students' learning levels.

AI can support education through:

- Adaptive learning systems;
- Personalised practice and feedback;
- Translation into Indian languages;
- Speech-to-text and text-to-speech services;
- Support for students with disabilities;
- Automated administrative work;
- Early identification of students at risk of dropping out;
- Teacher lesson-planning assistance;
- Virtual laboratories and simulations;
- Career and skill guidance.

AI should not reduce education to continuous automated testing. Learning requires curiosity, social interaction, creativity, ethical judgement and emotional development. Teachers must remain central to the educational process.

AI-generated content can also contain factual errors, fabricated references or cultural bias. Educational institutions should develop rules concerning disclosure, academic integrity, verification and appropriate use. Students should learn how to question AI output rather than accepting it uncritically.

UNESCO's ethics framework calls for human oversight, privacy, non-discrimination, sustainability and AI literacy. The World Bank similarly emphasises connectivity, computing access, contextual data and competencies as foundations for inclusive AI adoption.

7.4 Manufacturing and Industry 4.0

India's transition to a developed economy requires a competitive and technologically sophisticated manufacturing sector. AI can strengthen industrial production through:

- Predictive maintenance;
- Automated visual inspection;
- Digital twins;
- Robotics and collaborative robots;
- Supply-chain optimisation;
- Energy management;
- Intelligent product design;
- Mass customisation;
- Workplace-safety monitoring;
- Demand forecasting.

Large firms may have the resources to invest in these technologies, but smaller manufacturers often lack data scientists, computing resources and capital. Shared AI testing centres, industrial data spaces, cloud-based applications and affordable digital-twin services can help MSMEs participate in Industry 4.0.

NITI Aayog has proposed AI-ready industrial parks, shared high-performance computing facilities, manufacturing data grids, robotics-testing zones and advanced manufacturing credentials. Such measures could improve

productivity while preventing the technological exclusion of smaller suppliers.

Industrial policy should reward not only labour-cost reduction but also job quality, worker safety, export competitiveness, energy efficiency and domestic technological capability.

7.5 Financial Services and Inclusion

AI can strengthen financial services by improving fraud detection, cybersecurity, customer support, risk management and regulatory compliance. It can also enable smaller businesses and individuals to access financial services where traditional credit records are limited.

Applications include:

- Detection of suspicious transactions;
- Alternative credit assessment;
- Automated compliance monitoring;
- Insurance-claim processing;
- Personalised financial guidance;
- Multilingual banking assistance;
- Identification of financial scams;
- Early warning of institutional risk.

Alternative credit scoring, however, can become discriminatory if models use inappropriate proxies for income, location, gender, caste or social status. Customers must be informed when AI influences significant financial decisions. They should be able to challenge incorrect decisions and request human review.

The principle should be consent-based, explainable and contestable financial AI. Efficiency must not be achieved at the cost of fairness or financial exclusion.

7.6 Governance and Public-Service Delivery

AI can improve state capacity by helping governments analyse information, monitor schemes, detect anomalies and respond more rapidly to citizen needs. When integrated with digital public infrastructure, AI can make services more accessible and proactive.

Potential applications include:

- Translation of government information;
- Citizen-service chatbots;
- Detection of duplicate or fraudulent claims;
- Analysis of public grievances;
- Traffic and public-transport management;
- Revenue and tax analytics;
- Judicial and administrative research assistance;
- Disaster-response coordination;

- Monitoring of infrastructure projects;
- Identification of gaps in welfare delivery.

India's digital public infrastructure provides an important base on which AI-enabled services can be developed. NITI Aayog's DPI@2047 roadmap views digital public infrastructure as an instrument for inclusive, productivity-led growth.

Nevertheless, the use of AI by the state requires stronger safeguards than many ordinary commercial applications because government decisions can affect liberty, welfare, employment and access to essential services. No citizen should be denied a benefit solely through an unexplained automated decision. Administrative AI should include notice, explanation, human review, audit records and accessible grievance redress.

7.7 Smart Cities, Transport and Infrastructure

Rapid urbanisation creates challenges involving traffic, housing, waste, pollution, water supply and energy. AI can help cities operate infrastructure more efficiently through:

- Adaptive traffic signals;
- Public-transport route optimisation;
- Predictive maintenance of roads and bridges;
- Detection of water leakage;
- Energy-demand forecasting;
- Waste-collection planning;
- Air-quality monitoring;
- Emergency-response management;
- Urban flood forecasting;
- Building-energy optimisation.

Smart-city systems should not become instruments of unrestricted surveillance. Facial recognition, behavioural tracking and predictive policing involve serious risks to privacy, equality and civil liberties. High-risk systems require explicit legal authorisation, necessity and proportionality tests, independent audits and strict limits on data retention.

7.8 Climate Action and Environmental Sustainability

India is highly vulnerable to heatwaves, floods, droughts, landslides, glacial changes and coastal risks. AI can strengthen climate resilience by combining satellite data, weather observations and historical patterns.

Applications include:

- Localised weather forecasting;
- Flood and landslide warnings;
- Forest-fire detection;
- Crop and water-stress monitoring;

- Renewable-energy forecasting;
- Electricity-grid optimisation;
- Pollution tracking;
- Biodiversity monitoring;
- Climate-risk assessment for infrastructure.

AI also has an environmental cost. Training and operating large models can require substantial electricity, water and hardware. India should promote energy-efficient models, renewable-powered data centres, transparent environmental reporting and reuse of models rather than unnecessary duplication.

7.9 Science, Research and Innovation

AI can accelerate scientific discovery by analysing large datasets and generating possible solutions faster than traditional methods. Important areas include:

- Drug and vaccine discovery;
- Genomics;
- New materials;
- Battery technology;
- Climate science;
- Space research;
- Semiconductor design;
- Agricultural biotechnology;
- Language technologies;
- Engineering simulation.

India should establish national AI research facilities connecting universities, laboratories, hospitals and industry. Publicly funded research should, where appropriate, produce open datasets, open models and shared tools. This would reduce duplication and strengthen domestic knowledge capacity.

7.10 Defence and National Security

AI can support defence through surveillance analysis, logistics, cyber-defence, autonomous navigation, intelligence assessment and predictive maintenance. It can also help identify cyber intrusions and protect critical infrastructure.

However, military and security applications involve significant ethical and strategic risks. Human command and accountability must remain central to decisions involving the use of force. India should develop clear doctrines for human control, reliability testing, cybersecurity and lawful use of autonomous technologies.

8. AI, EMPLOYMENT AND THE FUTURE OF WORK

The effect of AI on employment will vary across occupations. It is more accurate to state that AI will transform tasks than to assume that it will eliminate complete occupations. A doctor may use AI to analyse images but will still be responsible for diagnosis and patient communication. A teacher may use AI to create exercises but will remain responsible for motivation and classroom interaction.

Three employment effects are likely:

8.1 Displacement

Routine clerical, documentation, customer-support and basic analytical tasks may require fewer workers. Entry-level jobs in some service industries may be especially vulnerable because AI can perform the simpler tasks through which young workers traditionally gain experience.

8.2 Augmentation

Teachers, doctors, engineers, lawyers, administrators, technicians and agricultural professionals may become more productive when AI assists with analysis, documentation and decision support. Augmentation can raise service quality without eliminating the need for professional judgement.

8.3 Creation of New Occupations

AI will create demand for:

- Data and machine-learning specialists;
- AI trainers and evaluators;
- Model-risk managers;
- AI auditors;
- Cybersecurity professionals;
- Data stewards;
- Robotics technicians;
- AI safety researchers;
- Domain-specific AI professionals;
- Digital-content verification experts.

The policy challenge is that jobs may disappear faster than workers can acquire new capabilities. India therefore requires a continuous learning system rather than one-time education. Skill India, universities, industrial training institutes, online platforms and employers should create stackable qualifications that workers can complete throughout their careers.

A national AI transition policy should include:

1. AI literacy for all students and workers;
2. Sector-specific reskilling programmes;
3. Apprenticeships in AI-enabled workplaces;
4. Recognition of prior learning;
5. Income and placement support during retraining;
6. Employment-transition data at district and sector levels;
7. Social protection for gig and platform workers;
8. Incentives for firms that augment workers instead of pursuing unnecessary displacement.

9. MAJOR CHALLENGES

9.1 Digital Divide

AI can widen inequality where reliable electricity, broadband, devices and digital literacy are unevenly distributed. Rural communities, low-income households, women, elderly citizens and persons with disabilities may be excluded. Public access centres, affordable connectivity and accessible design must therefore form part of AI policy.

9.2 Data Quality and Representation

AI systems depend on data. Inaccurate, incomplete or socially unrepresentative datasets produce unreliable outcomes. India's linguistic, cultural, geographic and socioeconomic diversity makes representative data particularly important.

Datasets should be documented according to their source, limitations, consent conditions and demographic coverage. Communities affected by data collection should have a role in governance.

9.3 Privacy and Consent

Health, education, financial and welfare datasets contain sensitive personal information. The Digital Personal Data Protection Act, 2023 recognises both the right of individuals to protect personal data and the need for lawful processing. AI systems should apply purpose limitation, data minimisation, security safeguards and meaningful consent.

9.4 Algorithmic Bias

Historical data may contain social inequalities. An AI system trained on such data may reproduce discrimination even when protected characteristics are removed. Bias testing must consider indirect proxies such as postal code, language, income, educational institution and occupation.

9.5 Explainability and Accountability

Complex AI models may produce decisions that are difficult to explain. Where AI affects employment, credit, healthcare, education, welfare or criminal justice, individuals require understandable reasons and an opportunity to challenge the result.

9.6 Cybersecurity and Malicious Use

AI can strengthen cybersecurity, but it can also be used to generate phishing messages, malicious code, synthetic identities and automated disinformation. Government systems and critical infrastructure will require continuous monitoring, adversarial testing and incident-reporting mechanisms.

9.7 Deepfakes and Misinformation

Generative AI can produce realistic but false audio, video and images. Deepfakes threaten elections, social harmony, individual reputation and national security. India's AI Governance Guidelines identify misinformation,

deepfakes, discrimination, opacity and systemic risks as important areas requiring coordinated responses.

Technical measures such as content provenance, watermarking and detection systems must be combined with platform responsibility, public awareness, law enforcement and media literacy.

9.8 Technological Dependence

Dependence on imported chips, foreign cloud services and proprietary foundation models can create economic and security vulnerabilities. India needs domestic capabilities in semiconductor design, high-performance computing, datasets, language models and cybersecurity.

Technological self-reliance should not mean isolation. India should combine domestic capability with international research partnerships and open scientific exchange.

9.9 Market Concentration

The high cost of computing and data can allow a small number of firms to dominate AI development. Competition policy, interoperability, open standards and public compute infrastructure are required to preserve innovation and prevent excessive concentration.

9.10 Environmental Cost

Data centres and AI models consume energy, water and hardware. Sustainability assessments should become part of major public AI projects. Smaller, specialised models may often be more efficient than very large general-purpose systems.

10. RESPONSIBLE-AI FRAMEWORK FOR VIKSIT BHARAT

India's AI approach should be based on the following principles.

10.1 People First

AI should advance human welfare, dignity and capabilities. Citizens must not be treated merely as sources of data.

10.2 Inclusion by Design

Systems should support Indian languages, voice interfaces, persons with disabilities and low-connectivity environments. Inclusion should be assessed before deployment rather than added later.

10.3 Human Accountability

A human institution must remain responsible for every consequential AI-supported decision. Responsibility cannot be transferred to an algorithm or software vendor.

10.4 Risk-Based Regulation

Low-risk applications may operate under flexible standards. High-risk applications in healthcare, welfare, policing, employment, education, finance and critical infrastructure should face stronger testing, documentation and audit

requirements.

10.5 Transparency and Contestability

Individuals should know when they are interacting with AI or when AI materially influences a decision. They should have access to explanations, correction procedures and human review.

10.6 Privacy and Data Stewardship

Data should be collected and processed lawfully, securely and only for legitimate purposes. Public-interest data sharing should use privacy-preserving and consent-based mechanisms.

10.7 Safety and Security

AI systems must be tested for accuracy, robustness, cybersecurity and misuse. High-risk models require red-team testing and continuous post-deployment monitoring.

10.8 Sustainability

AI procurement and development should consider energy use, water use, electronic waste and carbon emissions.

10.9 Innovation-Friendly Governance

Regulation should protect citizens without preventing socially beneficial experimentation. Regulatory sandboxes, standards and shared testing infrastructure can support both safety and innovation.

These principles broadly align with India's responsible-AI framework, the India AI Governance Guidelines, UNESCO's Recommendation on AI Ethics and the OECD AI Principles.

11. PROPOSED ROADMAP TO 2047

Table 1

Period	Strategic Priority	Major Actions
2026–2030	Build foundations	Expand compute, connectivity, datasets, AI literacy, research centres, governance standards and safety institutions
2030–2040	Scale inclusive adoption	Deploy validated AI systems across agriculture, health, education, manufacturing, MSMEs and local government
2040–2047	Achieve global leadership	Lead in frontier research, multilingual AI, responsible governance, scientific innovation and exportable public-interest solutions

11.1 Phase I: Foundation Building, 2026–2030

India should:

- Provide affordable compute access to universities, startups and MSMEs;
- Expand AIKosh with high-quality, representative and documented datasets;
- Develop indigenous multilingual and multimodal models;

- Introduce AI literacy throughout school, vocational and higher education;
- Train civil servants, judges, teachers and healthcare workers;
- Establish independent testing and auditing institutions;
- Create sector-specific AI standards;
- Develop secure public-procurement rules;
- Strengthen semiconductor, cloud and cybersecurity capabilities;
- Fund AI research addressing Indian social and economic needs.

11.2 Phase II: Nationwide Scaling, 2030–2040

The second phase should move from pilot projects to interoperable and validated systems. Priorities should include:

- AI advisory systems for farmers in every major Indian language;
- Diagnostic support at primary and community health centres;
- Personalised learning tools in government schools;
- Shared AI services for MSMEs;
- AI-enabled energy, transport and water management;
- District-level employment and skill intelligence;
- Automated but contestable welfare administration;
- National frameworks for algorithmic audits and incident reporting.

Public-sector projects should be evaluated according to measurable outcomes such as reduced waiting time, improved learning, lower crop losses, better health outcomes or increased manufacturing productivity. The number of AI systems installed should not be treated as evidence of success.

11.3 Phase III: Global Leadership, 2040–2047

By 2047, India should aim to become a global centre for:

- Affordable and energy-efficient AI;
- Multilingual and culturally inclusive AI;
- AI for public health and agriculture;
- Responsible and democratic AI governance;
- AI-enabled scientific discovery;
- Safe autonomous systems;
- Open digital public infrastructure;
- AI education and workforce development;
- Exportable solutions for developing countries.

India can offer an alternative model of AI development based on scale, affordability, diversity and public purpose.

12. POLICY RECOMMENDATIONS

12.1 Establish an AI for Viksit Bharat Council

A high-level coordinating body should align the work of ministries, states, regulators, academia and industry. It should publish annual progress indicators and identify gaps in adoption, safety, skills and inclusion.

12.2 Create Sectoral AI Missions

Dedicated missions should be established for agriculture, health, education, manufacturing, climate resilience and public administration. Each mission should include domain experts, technologists, citizens and regulators.

12.3 Develop National AI Impact Indicators

India should measure:

- Productivity gains;
- Employment creation and displacement;
- Rural and regional access;
- Gender and social inclusion;
- Accuracy and failure rates;
- Grievance-resolution outcomes;
- Environmental impact;
- Public trust;
- Export and innovation performance.

12.4 Make AI Literacy Universal

AI literacy should include not only coding but also:

- Understanding AI limitations;
- Evaluating generated information;
- Protecting personal data;
- Recognising deepfakes;
- Using AI ethically;
- Working effectively with AI tools.

12.5 Strengthen Local-Language AI

Multilingual AI is essential for inclusive development. India should invest in speech, translation, optical-character recognition and language resources for scheduled, tribal and less-resourced languages.

12.6 Provide AI Infrastructure as a Public Good

Affordable compute, datasets, testing environments and foundational tools should be available to public institutions, universities and small enterprises. Shared infrastructure will reduce concentration and stimulate innovation outside major metropolitan centres.

12.7 Protect Workers During the Transition

Employers adopting AI at scale should conduct workforce-impact assessments and provide reskilling opportunities. Labour representatives should participate in decisions involving algorithmic management, monitoring and job redesign.

12.8 Require Audits for High-Risk Systems

High-risk AI should undergo independent assessments for:

- Accuracy;
- Bias;
- privacy;
- cybersecurity;
- explainability;
- accessibility;
- environmental impact;
- human oversight.

12.9 Promote Public–Private–Academic Partnerships

Government should define development challenges and provide enabling infrastructure, while universities and firms contribute research and implementation. Intellectual-property arrangements should preserve incentives while ensuring that publicly funded innovations create public value.

12.10 Encourage International Cooperation

India should participate actively in global discussions concerning AI safety, standards, cybersecurity and cross-border data governance. It should also support developing countries through shared digital public goods and capacity-building partnerships.

13. DISCUSSION

AI can become a significant accelerator of Viksit Bharat because it operates across almost every sector. It can raise industrial productivity while improving access to public services. It can help India overcome shortages of specialists by distributing knowledge through digital systems. Multilingual AI can reduce the distance between institutions and citizens. AI-enabled research can also help India move from being mainly a user and service provider to becoming a producer of advanced technology and scientific knowledge.

Nevertheless, AI is not a substitute for development fundamentals. A prediction system cannot compensate for inadequate hospitals, poor schools, weak transport or unreliable electricity. Similarly, an agricultural chatbot cannot replace irrigation, storage and fair markets. AI creates the greatest value when it is integrated with functioning

institutions and empowered professionals.

The distribution of benefits is as important as their total size. AI-led growth that benefits only a small number of companies and highly educated workers would be inconsistent with Viksit Bharat. Public policy must therefore intentionally expand access to computing, skills, datasets and finance. It should promote innovation in smaller cities, rural areas, universities and MSMEs.

India's diversity creates implementation challenges but also provides an opportunity. Technologies that work across Indian languages, income levels and infrastructure conditions can be adapted for many other developing countries. India can consequently emerge as a global leader in inclusive and affordable AI rather than merely reproducing models designed for wealthy economies.

14. CONCLUSION

Artificial intelligence can play a transformative role in building Viksit Bharat by 2047. It can increase productivity, improve governance, modernise agriculture and manufacturing, expand access to health and education, strengthen climate resilience and accelerate scientific discovery. It can also create new industries, occupations and opportunities for entrepreneurship.

The contribution of AI, however, will depend on the choices India makes today. Unregulated or unequal adoption can intensify unemployment, discrimination, privacy violations, misinformation and technological dependence. Responsible AI must therefore be people-centred, transparent, secure, contestable and inclusive.

India should prioritise human-AI collaboration instead of indiscriminate automation. Workers must be trained to use AI, professionals must retain responsibility for important decisions and citizens must be protected against automated exclusion. Affordable compute, representative datasets, indigenous models, multilingual systems and strong research institutions will be essential.

Viksit Bharat cannot be built by algorithms alone. It will be built by educated citizens, skilled workers, accountable institutions, innovative enterprises and empowered communities using AI as a tool for shared prosperity. When aligned with constitutional values and the principle of AI for All, artificial intelligence can become one of the most important strategic enablers of India's development journey towards 2047.

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